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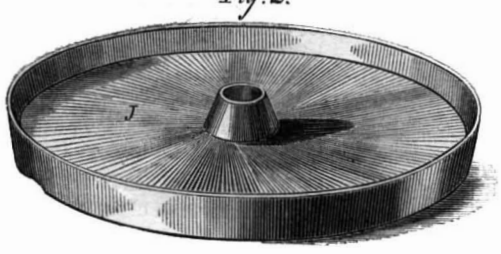
Improved Cooking Apparatus.

The primitive method of cooking meats has never been really improved. All meats are better, more healthy, juicy, and palatable when roasted than when prepared in any other way. Those who have pursued hunting as a sport, or a means of living, can testify to the delicacy of flavor imparted to specimens of the smaller varieties of game, when spitted and roasted before an open fire in the woods. In our homes we easily detect the difference between a broiled and a fried steak, and are compelled to award the meed of praise to the first. But in broiling, the house is often filled with the fumes of the meat and the kitchen dimmed with smoke. To remedy these inconveniences is one object of the device here illustrated, and to lighten the labors of the cook another.

The engraving represents a circular box of sheet metal, or cast iron, the bottom having an aperture at a point between the center and the periphery, which fits over the hole on the top of a stove, instead of an ordinary cover. Attached to this bottom is a cover with a handle sliding in guides, which projects beyond the box at the back, and by which the stove top can be covered or uncovered, without removing the whole apparatus. This device is not shown in the engraving.

A perforated circular disk, A, is suspended by the shaft, B, and is revolved by clock machinery contained in the drum, C, the connection being made by the clutch, D. By winding the clock spring at E, the disk, A, can be made to revolve at a steady and moderate speed for one hour. It may be stopped at any time by turning the screw head, F, and started by the same means.

Fig. 2.



The central shaft, B, has, just above the perforated plate, a milled disk, G, which serves to give motion to either or both the drums, H and I, which can be removed at will. H is an open and I a closed roaster for coffee. The berries are introduced at the ends of the drums, the heads being made double, and one sliding or rotating past the other.

For baking pies, cakes, or bread, the plate, J, Fig. 2, is placed over the perforated disk, the upper part or shell of the box being removed for this purpose. The shell can then be replaced, the door, K (broken away in the drawing), closed, and the apparatus becomes an oven, as close and perfect as could be desired.

It can be readily seen how convenient and efficient such a contrivance would be when applied to a cooking stove, range, or even a parlor stove which had an aperture at the top. Perfect evenness of cooking can be assured by the uniform movement of the disk, A, and the apparatus can be used either for the broiling or roasting of steaks, birds, poultry, joints, etc., or as an oven for baking of cakes, bread, pies, or any of the concoctions of the pastry worker. The cover, K, can be left open, or kept closed, as may be desired. When open the fumes from broiling or roasting will all follow the draught through the stove, as the contrivance sits close to the stove top.

The clock-work is sufficiently removed from the fire to be unaffected by the heat, and is of the simplest character, not liable to get out of order. The whole contrivance is as ornamental as it is useful.

Patented through the Scientific American Patent Agency, July 10, 1866, by A. C. Kasson, Milwaukee, Wis., to whom or to N. C. Gridley, Box 3,354, St. Louis, Mo., apply for rights or additional information.

Fig. 1.

KASSON'S COOKING APPARATUS.

The First Ship Building in this Country.

From the "History of American Manufactures," we learn that New York was the first locality of ship building in this country. The account is as follows:—

The first vessel, with the exception of a few open boats, built by the followers of De Soto, ever constructed by Europeans in this country, was a Dutch yacht, named the *Onrest* or *Restless*, of 38 feet keel, 44½ feet long, 11½ feet wide, and 16 tuns burden. She was built by Capt. Adriaen Block, at Manhattan (now East) River, in 1614, to supply the place of one destroyed by fire, which, with four others, arrived there that year from Amsterdam. In her, Captain Hendrickson, in August, 1616, discovered the Schuykill River, and explored nearly the whole coast from Nova Scotia to the Capes of Virginia, after which he returned to Holland; and having presented a finely executed map of the coast, he asked a grant of the country, which was not conceded, however. During the same year (1614), Captain John Smith sailed for "North Virginia" with two ships and forty-five men and boys, to make experiments upon a gold and copper mine. They reached the island Monahigan, on the coast of Maine, latitude 43 deg. 30 sec., in April, where they made some attempt at the whaling business; but failing in that, they built seven boats, in which thirty-seven men made a very successful fishing voyage. Thus the first humble attempt at the fishing business was made in American bottoms.

In 1624, within four years after the landing, the Colony at Plymouth received an accession of a carpenter and a salt maker, sent out by the Company. Of the former, Governor Bradford says, "He quickly builds two very good and strong shallops, with a great and strong lighter, and had hewn timber for ketches (a much larger description of vessel), but this spoilt; for in the heat of the season, he falls into a fever and dies, to our great loss and sorrow." The salt maker—for whom the lighter appears to have been built—selected a site and erected a building, and made an attempt to manufacture salt for the fishery, first at Cape Ann, and the next year at Cape Cod, both of which essays were, through his ignorance and self-will, unsuccessful.

At Monamet, now Sandwich, near Cape Cod, whither the settlers removed about that time, a pinnace was built by the Plymouth people in 1627, for the purpose of fishing. But the first vessel of any size constructed there was a bark built by subscription in 1641. She was of about fifty tuns burden, and was estimated to cost two hundred lbs. It appears by the records of Plymouth, there were thirteen proprietors, of whom William Paddy, William Hanburry, and John Barnes, owned each one-eighth part, and William Bradford, John Jenny, John Atwood, Samuel Hicks, George Bower, John Cook, Samuel Jenny, Thomas Willets, Stephen Hopkins and Edward Bangs, each one-sixteenth part.

The building of this vessel, though small, it has been truly remarked [see Mass. Hist. Coll.], "was an undertaking at that period of exigency and privation, surpassing the equipment of a Canton or Northwest ship with our means at the present day." John Drew, from Wales, who settled at Plymouth, as early as 1660, is believed to have been a ship carpenter, and a number of his descendants, in that and other times, pursued the business—one of them at Halifax, on the Winetuxet, a small branch of Taunton River.

SHIP-BUILDING IN MASSACHUSETTS.—In the records of the Governor and Company of Massachusetts Bay, it is stated, April 17, 1629, that they had "six shipwrights, of whom Robert Molton is chief;"

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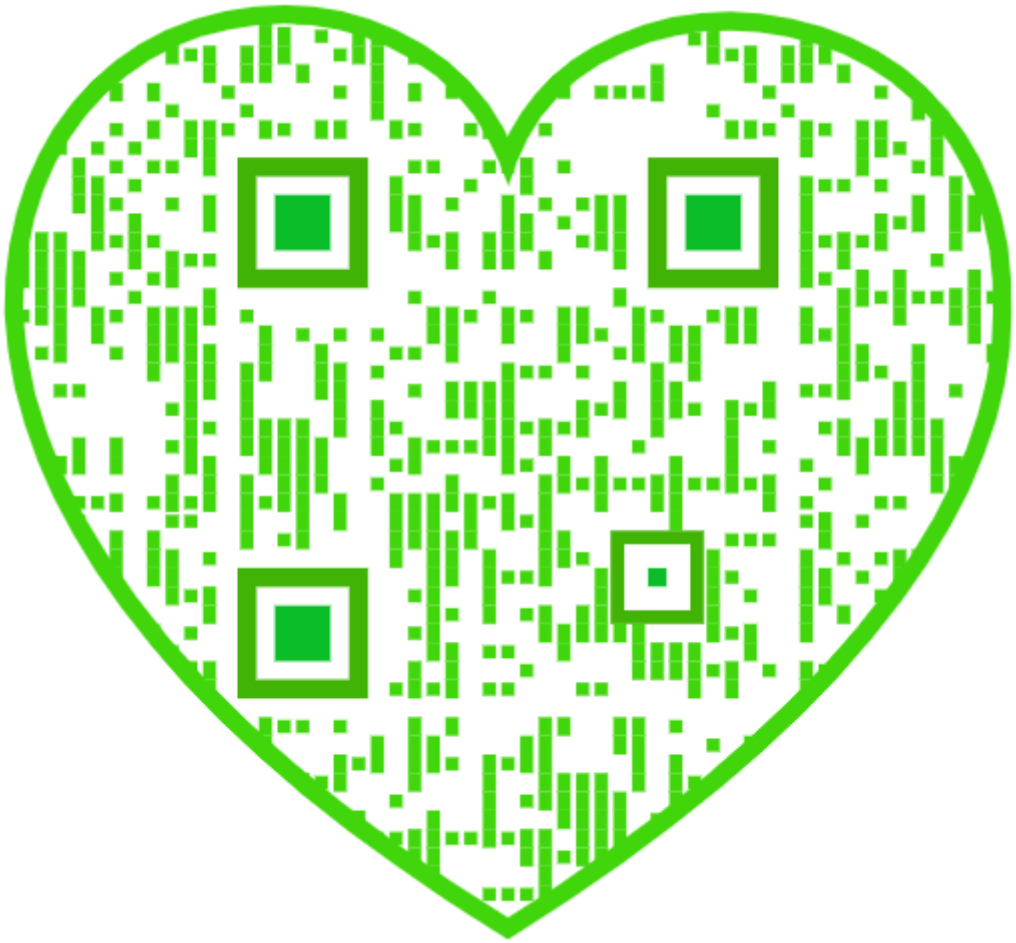

and in May following it was recorded that provision had been sent over "for building ships, as pitch, tar, oakum, tools, etc," and it was proposed to set apart a house for such stores, to make an inventory of them, and to give Molton the charge of the whole. Fishing vessels were to be built on shares. The first vessel ever built in Massachusetts—Plymouth being then a separate colony—was a bark launched at Mystic (now Medford) on the fourth of July, 1631, and named by Governor Winthrop, to whom she belonged, *The Blessing of the Bay*. In the course of the season this vessel made several coasting trips, and soon after visited Manhattan and Long Island. On this occasion, Mr. Winthrop says, the sailors were surprised at seeing, at Long Island, Indian canoes of great size. Some of these specimens of aboriginal boat building were capable of carrying eighty persons. The natives were no doubt equally amazed at the proportions and novel architecture of the largest vessel, probably, that had yet floated on the waters of the Sound. Another vessel of sixty tuns called the *Rebecca*, was built in 1633, at Medford, where Mr. Cradock, the first governor chosen by the Company, had a shipyard. A ship of one hundred and twenty tuns was built at Marblehead by the people of Salem in 1636.

CHILLED SHOT.

Mr. Fairbairn, in his treatise on iron ship building, which appeared so recently as the close of last year, records his opinion that cast and wrought iron were not materials calculated to make a serious impression upon armor plates, and that nothing had been found to answer the purpose better than hardened steel. The cast iron prepared by Dr. Price, and the case hardened shot prepared by Major Palliser, Mr. Fairbairn considered, might answer the purpose in some cases, but he questioned whether this material, however well prepared, could be made to hold together, and not break in pieces when the shot struck the plates. So he came to the conclusion that steel shot and shell were the only projectiles suited for attacking iron-plated vessels. Major Palliser, however, has recently succeeded in demonstrating most thoroughly and practically that, by his method of chilling the shot when cast, he obtains a metal possessing a hardness equal to that of steel and a toughness approaching very closely to that of wrought iron. He has thus solved one of the most important questions of modern gunnery—that of penetrating armor with shells which do not explode until they have passed through the plate and backing—or, in other words, completely through a ship's side. Major Palliser is by no means the first to accomplish this object; the credit of that is due to Mr. Whitworth, who effected his purpose with comparatively small projectiles and low charges of powder. Following the latter gentleman, others have done the same thing, but two serious drawbacks to success were always present. The shells for the most part exploded backward on contact, and being made of steel, were very expensive, their cost for large ordnance ranging from £7 to £20 each projectile. So, on the score of imperfection and of costliness, absolute success was not attained by any, nor until Major Palliser had perfected his chilled shot, which are both cheap and efficient, was it considered attainable. But the question was set at rest by a series of experiments which were carried out last week, at Shoeburyness, with various kinds of shell.

These experiments were instituted for the purpose of testing Major Palliser's chilled shells against those of the best steel projectiles, and in their results proved most valuable. The principle upon which Major Palliser manufactures these shells is worthy of notice as being something more than the old process of chilling. As the shells are required for a particular purpose, they must have something more than a mere chilled surface; a definite and carefully-determined hardness must be imparted throughout the metal. This condition is attained by a selection and combination of those brands of iron which have been found by experiment to chill to the exact extent required, a careful mean being observed between iron which it is difficult to chill and that which chills too hard. Added to the principle of manufacture is the principle of construction, which goes far toward the success of the projectile. The form given by Major Palliser is such as will convert the sudden shock of impact as much as possible into a uniformly increasing pressure. In other words, the projectile has an elongated-pointed head, which is as essential an element in it as is the perfect chilling of the metal. Upon the occasion in question the firing was from an ordinary 7-inch wrought-iron muzzle-loader, with full battering charges of 22 lbs. of powder and a range of 200 yards. The shells were directed against a "Warrior" target, which was built of the ordinary 4½-inch plate with 18 inches of teak backing and an inner iron skin, the whole well braced and strengthened. Half the target was bolted on Mr. Bascomb's plan of india-rubber pads, the other half of the bolts being secured by Mr. Paget's steel cup washers. At the conclusion of the experiments it was found that Mr. Bascomb's system had stood better than Mr. Paget's, but then it appears that the shots almost invariably struck that part of the target bolted on Mr. Paget's principle, while that portion fastened with Mr. Bascomb's washers was scarcely touched. The experiments were commenced by firing a steel shell on Major Alderson's plan, having a screwed base, and being charged with 3 lbs. of loose powder. The shell penetrated the 4½-inch plate, but did no more, except to explode backward from the face of the target. The next shell, which was of the best steel, of Mr. Firth's, passed through the plate and entered the wood backing, but it exploded outward as the first had done. The third shell struck on the edge of the hole made by the first, passing easily through and exploding in the teak backing, which it set on fire. Other shells were tried with similar results in some instances, in others they were even less satisfactory, some of Mr. Firth's shells bursting before they reached the target; a few exploded in the gun. Three of Sir William Armstrong's conical-headed shells, made on the Belgian pattern, with a sharp cone, were fired, and produced a similar effect to those previously fired. After all the steel shells had been tried, Major Palliser's chilled-iron shells were tested, and the first shot proved the superiority of the system over all the others. The shell struck an uninjured portion of the target and went through the plate and backing so quickly as not to explode until it had passed beyond. The backing where the shell had passed through was splintered into fragments, and had the object been the side of a ship instead of a target, the results would have been most damaging to a gun's crew at quarters. The charge of the second Palliser shell did not explode, but after passing through the target the projectile broke itself up into fragments, which were sent spinning about in all directions with a velocity nearly as dangerous as an explosion would have imparted to them.

The results of these two shots were so conclusive that the charge of powder was reduced to 18 lbs., with which the third shell was fired. This shell missed the target and went away to sea; the next, however, which was fired without a bursting charge, went through the target, breaking up and scattering its fragments as before. The charge was then further reduced to 16 lbs. of powder, which was nearly equal to increasing the range from 200 yards to 1,000 yards, while the velocity of each shot on striking was less than 1,300 feet per second. But for all this, the next shell penetrated the plate and backing and was only stopped by coming in contact with one of the heavy struts which supported the target from behind, and which it broke. At this stage of proceedings the Ordnance Select Committee ordered the firing to cease, considering a continuation would only be a waste of time and powder. This will be the more apparent when we state that a few weeks since Major Palliser's projectiles were tried against the "Bellerophon" target, which has 6 inches of iron with 22 inches of teak, and an inch iron inner skin. The results, however, were precisely similar to those with the "Warrior" target, the shells passing through quite as easily. The results therefore constitute a victory for guns over armor plates, and this long pending question may be considered for the present as definitively settled. For the present we say, because, although the *Warrior's* strong sides afford but little more protection against Major Palliser's shells than would those of a wooden ship, it is possible that we may in time find some means of neutralizing the damaging effects of these projectiles. It always has been so; throughout the history of the question victory has always alternated between the guns and the plates. But unquestionably Major Palliser has gained such a victory as will not easily be reversed, and has inaugurated such a condition of things as will require a long time and a considerable amount of scientific and engineering skill to render obsolete. The gallant officer's labors in perfecting our artillery system and in economizing this branch of our national expenditure are worthy of every praise, while the success he has recently achieved in producing a projectile before which an enemy's armored broadside would be no longer impregnable, entitles him to special distinction.—*Mechanics' Magazine.*

Extracting the Metals from Auriferous Quartz.

The following, from the *Alta California*, details a process of extracting the precious metals from quartz rock, which posesses some novel features:

"The rock is dry crushed, and afterward submitted to the action of balls in a drum to insure full pulverization, it being desirable that the powder should approach as near wheat flour as possible. A charge of this powdered quartz is then placed in an air-tight cylinder, the interior of which is furnished with a worm of pipes to convey superheated steam therein. Added to the charge is a given quantity of quicksilver, which is first heated by the introduction of ordinary steam; the superheated steam is then turned on, or the whole seethed or boiled for an allotted period. On the top of this cylinder a water bath is placed, and as the mercurial vapors rise they become condensed. Thus the system of thoroughly impregnating the crushed rock with quicksilver is carried out with efficiency After thus cooking, the cylinder door is opened, and the whole mass discharged upon a novel shaking table, which is worked by the power of the steam employed in the previous operation. This table is built of copper, on a wooden frame, with rollers and riffles of peculiar construction, which, when it is in motion, give the water, amalgam, and dust the same action of the ocean surf—an undertow. As the mass descends, the amalgam, from its metallic weight, gradually clears itself from the quartz dust, and the result is that it is all collected in the troughs of the riffles, containing every particle of metal, be it precious or base, the quartz holds. The mode of applying superheated steam to the crushed rock desulphurizes it, freeing the metals, and all that is necessary is to retort the amalgam to obtain the result of the yield.

Monitors and Heavy Guns in Sweden.

The Swedish Government has lately built three iron-clad ships of the monitor pattern, two of which, the *Ericsson* and the *Thunder* are afloat. The third, still on the stocks at the Motala works in Norrköping, is 250 feet long, with great breadth of beam. The turret is of twelve thicknesses of inch-plate iron, beautifully fitted together, and inclosing two 15-inch guns. The main wheel for the turret is of cast iron, which must be acknowledged to be a signal defect in this important feature of the plan. The Swedes disapprove the system of coil twist for guns, and declare that the iron from Dannemora, of which the Armstrong guns are made, is not suitable for the more solid-made guns adopted by Sweden. Two of these are shown in the exhibitions at Stockholm; one is a rifled breech-loader, the other a smooth bore. The engines of the new monitor are also in the exhibition, and are wonderfully compact trunk engines of 150 horse-power, with the two cylinders end to end and across the keel.

At Motala also there is a very peculiar iron-clad gunboat, which is more like a canoe than anything else. The bow or "nose" is depressed, so that the water line, when on war service, will be almost at the summit of the arched deck. The single gun carried by this formidable craft is in a mailed gun house, fore and aft, in the center of the deck, and the gun cannot be separately trained, but the whole boat must be directed so as to point it. Thus the only aperture for hostile entry into the gunboat is that of a few inches for the shot to issue from the muzzle of the gun. The boat is about 100 feet long, and it looks like a great whale with a cannon on its back.

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BURNING OF A FRICTION MATCH.

Among the varied operations of the arts there is perhaps no other involving so many chemical and physical changes, and so many philosophical principles, as the burning of a friction match.

First in importance is the intense affinity of phosphorus for oxygen, as it is this property which makes a friction match possible. This affinity is so strong that when phosphorus is exposed to contact with the oxygen of the atmosphere at ordinary temperatures, the two substances combine slowly, generating light which is visible as a faint glow in the dark; and if the temperature is raised to about 120 deg. the combination goes on with that rapidity which we call combustion. It is easy to produce this degree of temperature by friction—hence the possibility of the friction match.

It is necessary, indeed, to modify the inflammability of phosphorus for its use in a friction match, and this is done by mixing it with a little gum. The gum also protects it from slow combustion in the atmosphere.

The flame of phosphorus, though intensely hot, will not set fire to pine wood; it is, therefore, necessary to interpose some substance more readily inflammable than wood; the substance usually employed is sulphur. Pine wood ignites at a temperature of about 600 deg., and sulphur at 450 deg. to 500 deg. The phosphorus in burning kindles the sulphur, and the sulphur flame sets fire to the wood.

The refusal of the phosphorus flame to kindle wood is fruitful of suggestions. The quantity of heat generated by the burning of any substance is in proportion to the quantity of oxygen with which the substance combines. One atom of phosphorus in burning combines with five atoms of oxygen, producing phosphoric acid, $P O_5$. The atom of phosphorus weighs 32 and the atom of oxygen 8, so the proportion by weight is 32 pounds of phosphorus to 40 of oxygen. Sulphur, in burning, combines with oxygen in the proportion of one atom of sulphur to 2 of oxygen, $S O_2$, and as the atomic weight of sulphur is 16 the proportion by weight is 32 of sulphur to 32 of oxygen, consequently phosphorus should generate more heat in burning than sulphur.

Again, this law is modified by either the oxygen or the combustible undergoing a change of form in combining. If a substance is changed from the gaseous to the solid state, heat is evolved; if from the solid to the gaseous, heat is absorbed. Now, phosphoric acid is a solid, while sulphurous acid is a gas. Phosphorus, in burning, changes the oxygen with which it combines from the gaseous to the solid form, thus increasing the quantity of heat generated; while sulphur, in burning, is changed from the solid to the gaseous state, thus absorbing heat, and diminishing the quantity produced by the combustion.

These theoretical views have been confirmed by careful experiment. The results obtained by Andrews from his elaborate investigations were, that 1 pound of phosphorus in burning to phosphoric acid generates sufficient heat to raise the temperature of 5,747 pounds of water one deg. centrigrade; while 1 pound of sulphur, in burning, raises the tem perature of only 2,220 pounds of water 1 deg.

But it is not the quantity of heat that is to be considered in this case, but the intensity; which is in proportion to the quantity contained in a cubic inch or other given volume. This, however, only increases the difficulty, for the phosphorus flame being condensed to a solid, while that of sulphur is diffused as a gas, the intensity of heat ought to be still more in favor of the phosphorus than the quantity.

The usual explanation given for the failure of wood to ignite in a phosphorus flame is, that the surface of the wood is instantly covered by a film of phosphoric acid, which protects it from combustion. As we have no better explanation to offer, we raise no objections to this.

The products of combustion, then, in the burning of a match, are, first, phosphoric acid from the burning of the phosphorus; then sulphurous acid, from the burning of the sulphur, and, finally, carbonic acid and water from the burning of the wood.

This is far from being an exhaustive examination of the subject. The hydrogen and carbon of the wood do not combine directly with the oxygen of the air, but the wood first undergoes destructive distillation, with the production of several hydrocarbon gases, which rise in the air and produce the flame by their combustion; and after the wood is burned the ash that is left behind is made up of some sixteen elements, combined with oxygen in various proportions. The activity of the burning, also, is increased byadding to the paste some substance containing oxygen which is held by feeble affinity, and which is, therefore, readily given up to the sulphur, phosphorus, and wood. Among the substances employed for this office are saltpeter and the peroxides of lead and manganese. In a complete examination of the reactions of the combustion, the decompositions of these oxidizing agents, with the resulting compounds or elements, would demand consideration. All that might be said in relation to the burning of a friction match would fill a large volume.

TARGET TEST WITH LARGE GUNS.

Some experiments were made at Fortress Monroe on the 21st instant, which, from the data so far at hand, appear to possess some interest. The trials were made with the design of ascertaining the advantage of iron-plating as a defense to fortifications of masonry.

The guns used in the test were a 15-inch smoothbore; and a 12-inch rifled piece, both of the Rodman patent. They had been well proved before the trial. The target was a wall of granite blocks, six feet thick, the blocks secured with iron dowels and clamps, covered with rolled plates, four inches thick, of the best iron. These were bolted directly to the face of the stone, except at one point, where a backing of six inches of sand was interposed between the plate and wall. The results, in tabular form, are these:

Gun.	Charge.	Projectile.	Initial velocity.	Penetration.	Target.
Smooth-bore.	46lbs.	432lbs.	1,155ft.	8in.	Granite.
"	"	"	1,113ft.	5½in.	Sand.
Rifle.	55lbs.	620lbs.	1,020ft.	4⅜in.	Granite.
"	"	"	1,079ft.	5¾in.	"
"	"	"	1,103ft.	7in.	Sand.

The experiments show that iron constitutes a defense against the penetration of shot, although the shock of the projectiles in this trial shattered the granite wall. The charges of powder used were less than it was popularly believed the 15-inch guns were capable of sustaining. The placing of the plates in close connection with the wall may be an error, as the effects of the concussion would be transmitted directly to the work itself. It would appear, from the stated initial velocity of the shots, that the powder used was the "cake," or large powder, and not that sometimes employed in tests for guns. We forbear, however, commenting on the results of this trial until we have the official record of the experiments.

HONOR TO WHOM HONOR IS DUE.

The first rail cars were mounted on four wheels, which turned on axles fixed rigidly to the body of the carriage. Mr. Richard Imlay, of Philadelphia, in 1832, invented the "vibrating plate" of car trucks and applied it, in 1834, to cars on the Germantown and Norristown Railroad. In 1837 he patented his improvement, and in 1851 secured an extension of his patent. From adequate authority it is certain he was the first, at his manufactory in Baltimore, to build cars with independent trucks, by which cars of any length now used could be run on roads with sharp curves. Mr. Imlay's invention is in general use throughout the country, and has been for many years. Indeed, no invention or improvement in railroading is of so much importance as this. He is now over eighty years of age, totally blind from cataract, with a wife who is suffering from the most acute form of cancer. The friends of this suffering family ask that the railroad corporations throughout the country shall recognize his claims, the justice of which can be fully substantiated, so that he shall not be left dependent upon charity, where he is entitled to compensation justly due.

Mr. Imlay is physically and financially incapacitated to recover for infringements and to enter into legal prosecution, and he desires, simply, that railroad companies make him a small compensation for an invention that has, more than any other, made their enterprises a success.

He is, indisputably, the originator of the independent trucks, by which long cars can be run with safety at a high rate of speed, and round, with security, curves impossible to be turned with the old fashioned car. We call the attention of railroad corporations to this case, believing that they will see, as well as we, the justice of Mr. Imlay's claim, and the duty of making a suitable return for the value of his improvement.

Mr. Imlay resides at 138 West 16th street, New York City.

POLYTECHNIC ASSOCIATION OF THE AMERICAN INSTITUTE.

The Association held its regular meeting at its room at the Cooper Institute, on Thursday evening, Sept. 28, 1866.

AN IMPROVED CAR.

Several inventions of minor note were introduced, and their merits thoroughly discussed. One, however, received with special interest, was a plan for a street car, designed to transfer the traction from the ground to the metallic bottom of the car, which thus takes the place of a rail. The wheels are mounted on a number of pedestals attached to an endless band encircling the car. This is, perhaps, the best application of the old principle of a portable track that has been invented, but its practical value remains to be tested.

BARYTES, AND ITS USES.

A recent application of sulphate of barytes has been made in preparing the so-called "perspiration-proof" paper collars, in place of white lead. It is also used for giving the fine gloss to visiting cards, and wall paper, and in England, cotton collars are made by its use, having all the appearance and finish of linen.

VENTILATION.

The regular subject being introduced, the remarks seemed to take a practical turn, and the actual necessity and means for ventilating our dwellings were dwelt upon at some length. The method of ventilating sleeping cars in use on one of our railroads was explained, where the air is made to pass through an air chamber, into which water is forced as a fine spray, thus cleansing it of any impurities. In the ice cars, used for bringing dressed meat from the West, the impure air is passed over ice, placed near the top of the car, then is conveyed to near the floor, where it again enters the car, thus keeping up a continuous current of pure air. The same principle has been used in our hospitals for fever patients with good results.

Cooper Union Free School.

The session of this school commenced Oct. 1st. The school is open every evening except Sundays, free to all. The courses of study comprehend all the useful and some ornamental branches. It offers an excellent opportunity for clerks, apprentices and others, whose means, or avocations, do not permit them to employ paid teachers, or to attend day schools. The schools are under the charge of Prof. J. G. Fox as Principal, and the department of Physics is managed by Prof. Charles S. Stone, whose reputation as a chemist and a lecturer is well known. Ladies are admitted to any of the classes of the school of science for which they are fitted.

Important to Southern Inventors.

The order promulgated from the Patent Office some time ago, that all applicants for patents from States late in rebellion must furnish certificate of allegiance, has been rescinded, and hereafter inventors from the Southern States can obtain patents on the same conditions as citizens of the Northern States.

AN accident occurred at the Naval Academy, Annapolis, a few days ago, which, but for timely aid, might have proved a most serious affair. One of the decks of the *Winnepec* having been painted with gum shellac, one of the sailors accidentally dropped a lighted lantern on it. The shellac, becoming ignited, enveloped the deck in flames. By prompt action the fire was extinguished. Rumor says there was a large quantity of powder on the vessel at the time.

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Corn Husker, Harvester, and Stacker.

The operations of farm work are so facilitated by the labor and time-saving machines which have replaced the slow efforts of unaided muscle, that few could be found now who would, under any circumstances, voluntarily return to the old beaten path. The work of harvesting corn is one entailing the expenditure of much hard labor, and to save a portion of this labor is the design of the machines herewith illustrated.

Fig. 1 represents an apparatus for forming corn or cane into shocks, and delivering them in an upright position. The frame is supported on wheels, one of which carries a geared wheel, which, by means of suitable devices, gives a reciprocating motion to the cutters, A, for cutting the stalks. The guard, B, projecting beyond the cutters is intended to raise any stalks which may be bent or broken down. As the stalks are cut they are thrown by means of the revolving arms, C, upon an endless belt, carrying teeth and bars, D, which deposit them upon a table, E, connected to the frame by a universal joint. Bands for securing the stalks lie upon the table, which, when a sufficient quantity of corn is thrown upon the table, are tucked around the stalks, making a shock, which, by revolving the table horizontally and then tilting it vertically, is discharged upon the ground in an upright position, the larger ends of the stalks on the ground.

Fig. 2 is a machine for gathering and husking corn in the field. The stalks are received between two curved arms, A, mounted on the fore wheels, and are supported by two rollers on the under side, not shown. The roller, B, presses the stalks against a cutter, C, which receives a reciprocating motion by means of a crank, the pinion, D, and the cogs on the periphery of one of the fore wheels. The cutter, C, severs the ears from the stalk and they are thrown upon the endless belt, E, which conveys them to the wire guards over the toothed wheel that strips the husks from the ear, and deposits the ears in the box underneath.

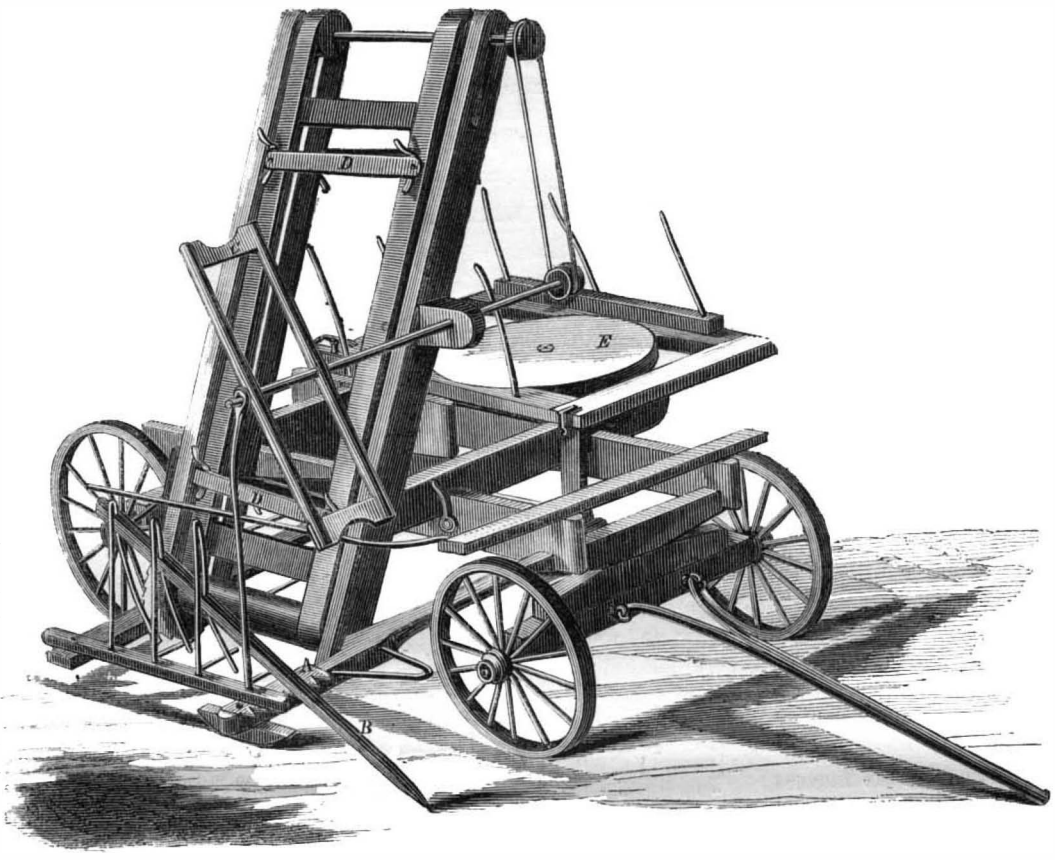
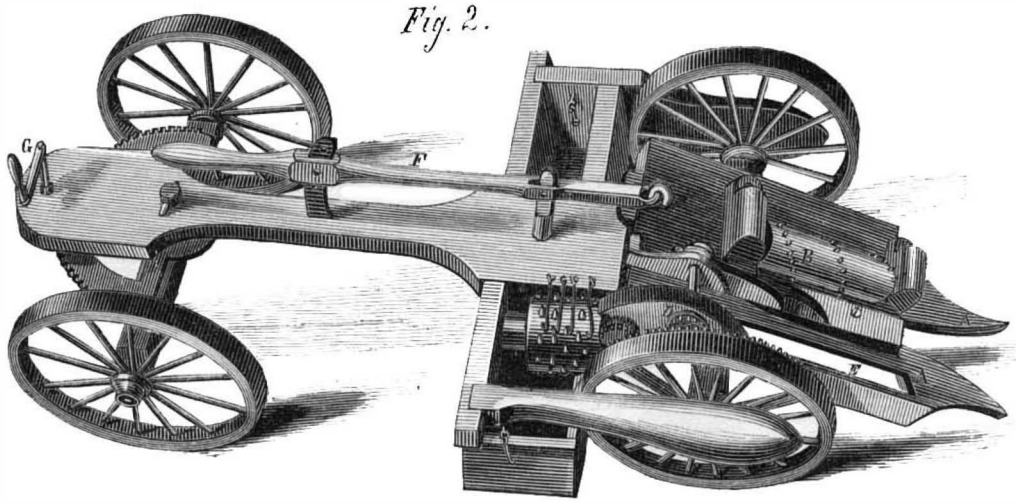


Fig. 2.



MANLOVE AND GREEN'S HUSKER, HARVESTER, AND STACKER.

The frame, A, can be raised or lowered to accommodate itself to depressions in the soil by the lever, F, which is operated by the driver, who sits on a seat placed at the rear of the machine. By the toothed segment and a pinion worked by the crank, G, the vehicle is steered.

Both of these implements were secured through the Scientific American Patent Agency, by George H. Manlove and Jonathan P. Green, assignors to the former. Patented Sept. 25, 1866. Address George H. Manlove, Drawer 6,068, Chicago, Ill.

Concerning American Steel.

Our Newark, New Jersey, correspondent, P. McC., in speaking of the cast steel made in this country, says there can be as good an article produced here as anywhere, if the proper means are employed. Unless a proper quality of iron is used, purified by refining, converted to blister steel in a suitable furnace, where it receives its carbon, before it is put in the crucible to be melted, it cannot be relied upon. He says:—"I do not think it can be for want of knowledge that our steel is inferior, for two companies I know of sent to England and brought over workmen, who made no better steel than the hands previously employed. One concern tried hammering the blooms until they were made flat, then cut or broke them up, the iron being 'red short,' and put the fragments, with a portion of 'medicine,' into the crucible for casting. Some steel I have tried, the iron from which it was converted having been rolled. It was 'red short.' Some of our manufacturers say they cannot afford to use the best iron, nor the expense of processes employed in Sheffield. I say, if this is the case, they should not claim, as they do, that American steel is equal if not superior to English, nor that there is some mystery in the process. When blooms are made from old scraps, cast, or wrought iron, it cannot be expected that double refined steel will result, nor that the product will equal that made from Norway or Lowmoor refined iron."

THE POWER FOR CIRCULAR SAWS.—A correspondent, J. V. A., desires to know the horse-power needed for driving circular saws from 50 to 80 inches diameter, with a cut of from one to one-and-a-half inches; the size of pulley required and width of belt.

Railway over the Alps.

The pass over Mont Cenis, joining the fertile fields of Sardinia and Savoy, has always been the favorite of Alpine passes. Although the military route for ages, the road was in a deplorable condition till, by the enterprise of Napoleon, a substantial carriage way was constructed at an expense to the Government of seven million francs. For a number of years past this road, in connection with the French and Italian railroads and the Adriatic steamers, has formed the most direct and expeditious mail route to India and the East. The slow and tedious mountain passage, originated the project of completing the missing link of railway communication by tunneling the Alps. Whether this gigantic undertaking will ever be completed, admits of doubt. In the meantime, a company has been started with the design of accomplishing this same object by constructing a railroad over the summit of the mountain.

Mr. Fell, an English engineer, read an interesting paper on this subject before the British Association, and his statements leave no doubt as to the feasibility of the plan. Both the French and Italian Governments favor the enterprise, operations have already begun, and in all probability the road will be completed by March next From the difficulties to be overcome, the work must fairly be ranked as one of the greatest in the records of engineering. The inclines to be traversed by this road—without exception the steepest ever attempted—require a special construction both in the railway itself and locomotive.

The variations of climate during the year—always an important consideration in allowing for adhesion, or bite of the driving wheels on the rail—constitute here an important element, and necessitates the employment of a third or center rail. By this means not only is the proper amount of adhesion produced, but the additional advantage is obtained of furnishing means for applying an increased amount of brake power, and also preventing all possibility of either car leaving the track.

The engines and carriages have each, in addition to the usual vertical wheels, four horizontal wheels, having flanges underlapping the center rail, connected with brakes so as to grip the rails; these, in connection with the usual sets, give a brake pressure of 60 tuns in an engine weighing 16 to 17 tuns.

This principle of obtaining the adhesion required, in order to develop tractive force on railways, is equally applicable to a even much steeper gradient, than any found on the Mont Cenis road, and that consistently with the economical expense of mechanical power.

THE harbor of Galveston is becoming gradually filled up with sand.

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Correspondence

Preservation of Wood against Decay.

MESSRS. EDITORS:—In your issue of Sept. 15th I noticed an article containing, in a condensed form, the views of a correspondent in regard to the preservation of wood. This subject is so interesting and of such importance, that I regret that want of space prevented your publishing the communication in full.

In some respects I fully agree with your correspondent as to charring wood. The advantages of charring a post do not consist, as scientific men have supposed, in the capacity of charcoal to absorb the gases from decaying substances. But the application of heat to such an extent as to create charcoal on the outside of wood, will drive out the surface moisture and coagulate the albumen of the sap, and render it insoluble in water. While this treatment, as a seasoning process, is of great benefit, no one at this day will contend that it is essential to the preservation of wood. Neither Kyan, Burnett, Payne, Boucherie, Bethell nor Robbins, ever charred wood, in order to preserve it. Still, in my opinion, a certain degree of heat is necessary, if it be properly applied, and with it and through it vapors may be infused into wood, which will render it indestructible.

But your correspondent asserts that the microscope reveals the cause of decay in wood as due to parasites feeding upon albuminous substances, and he recommends the use of hot air or superheated steam as a means of destroying the parasitic germs or albuminoids which, he says, cause the decay of wood. There is something very new and original in this idea, and it raises several important questions for consideration.

First, Are the parasites the cause of decay in wood?

In botany we learn that a parasite is a plant without the proper organic means or instruments to enable it to draw its nourishment directly from the organized elements, but which derives its support from other plants to which it attaches itself. In entomology and zoölogy the parasite is represented as some insect or minute animal which lives on the superior forms of animated nature. According to Ehrenberg and other scientific authorities, while these creatures exist wherever organized matter is undergoing decomposition, it does not appear that the decomposing process is due to their presence. "Wherever organic matter exists in a decomposing state, there they abound, acting as scavengers in devouring, in the state of comminution and decay, those particles of decomposing matter which, if left to be diffused throughout the atmosphere, might be productive of the most pernicious malaria." [See Ehrenberg and Leeuwenhock; also Redfield's "Nature in Living Forms," p. 690.]

Brande, in his "Encyclopedia," says, It is not certain that dry rot is caused by parasites; on the contrary the terms are applied to "spontaneous decomposition without the presence of fungi;" or where these parasites appear long after the commencement of the disease in the wood. We doubtless mistake the effect for the cause when we assume that parasites produce the decay of vegetable and animal substances. It would rather seem that they are generated in and are a product of the process of decomposition, and they live but to consume and assimilate those elements which would render the earth and air unsuited to the essential conditions of health and life. To this end, according to Ehrenberg, they multiply at the rate of millions daily. If the parasites had any active or vital existence before the albumen of the wood was in a state of putrefaction, they might possibly be destroyed, to some extent, by the application of heat or some other means. But they are chiefly distinguishable after the process of decomposition has fairly commenced. They are only found in animal and vegetable infusions after the same have been kept a sufficient time to develop their existence in and through the decomposition of such substances. [Orr's "Circle of Science," vol. i. p. 87.] Parasites may, therefore, be regarded as a result, and not as the cause of decay in wood.

Second, Can these parasites be destroyed by the application of heat, as proposed?

We are assured by the best authorities that the polygastic infusoria are very tenacious of life; while they are injuriously affected by strong poisons, they are capable of enduring great extremes of heat and cold, and are found alike beneath the snows of the highest peaks of the Alps, and in the hot springs that perpetually boil from the heat of volcanic fires. [Redfield's "Zoölogical Science."]

But for the sake of argument let us suppose that the parasites, parasitic germs, or albuminoids may be destroyed by heat; will not the wood, after they have been destroyed, be again infested with new and similar formations which will be equally destructive? These germs exist in water and in the air, as well as in organized substances, and may be readily deposited on the surface and in the pores of the wood even after it has been subjected to superheated steam. If vegetable decomposition is due to the presence and action of the parasites, heat can protect the wood from their influence no longer than it is subjected to the temperature requisite for their destruction. As soon as it is exposed to air and moisture, at ordinary temperature, parasites may be again developed, and very rapidly; for, according to Ehrenberg, the *hydatina seta* increased in twelve days to sixteen millions, and another species, in four days to one hundred and seventy billions. Besides, scientific experiments have already fully established the fact that any infusion of vegetable or animal substance may be boiled for hours, and if subsequently exposed to the atmosphere, it will soon swarm with myriads of microscopic creatures. By placing the wood in an exhausted receiver and thus excluding the air and establishing a condition incompatible with the laws which determine their existence, this regeneration or re-formation of parasites may be prevented. So it might be prevented by the continued application of heat at its boiling point, or at a sufficiently destructive degree of temperature. It is very evident that wood which has been treated with heat only, when no longer under its influence and not protected by an exhausted receiver, may, by exposure to the oxygen and moisture of the atmosphere, be in a short time covered in surface and have its pores filled with infinitesimal germs and forms of life, which may cause it to decay [Orr's "Circle of the Sciences," vol. ii. p. 217.]

But suppose it is true that the parasitic germs or albuminoids are co-existent with the wood, that they are the cause and not the result of decay, the next question of importance is, how can they be destroyed, and their re-formation and re-infestment prevented in the cheapest and most effectual manner?

The application of heat, simply, either in hot air or in superheated steam, may destroy them, as your correspondent claims, and it will also coagulate the albumen of the sap, etc., but it cannot protect the fiber against the effect of oxygen and moisture, nor can it prevent the regeneration or re-attachment of the parasites after the wood is again exposed to the air. Besides, this treatment will empty the pores to some extent and leave the ligneous fiber unprotected. The capillary tubes, being left open and exhausted of the vital elements of the living tree, will readily take up an increased quantity of water. This water will escape by evaporation when the wood is exposed to the action of the sun. And by the constant vicissitudes of temperature and the ever-varying degrees of moisture, the elasticity of the fiber will be diminished, and in time the integrity of the wood destroyed.

Hence it is that the celebrated Dr. Ure, in his dictionary of the arts, affirms that, "although the albumen contained in the sap of the wood is the most liable and the first to putrefy, yet the ligneous fiber itself, after it has been deprived of all sap, will, when exposed in a warm, damp situation, rot and crumble into dust. To preserve wood, therefore, that will be much exposed to the weather, it is not only necessary that the sap should be coagulated, but that the fibers should be protected from moisture." This necessity of further protecting the wood from atmospheric influence, after the albumen has been coagulated, becomes greater if, according to the theory of your correspondent, decay is caused by parasites, which the atmosphere furnishes so abundantly. Now the question recurs, and your correspondent has done well in raising it, what is the best means of driving out the surface moisture, of coagulating the albumen, of destroying the parasites, parasitic germs, or albuminoids, and of preventing all parasitic influence upon the wood thereafter?

In one of your issues of February I saw a very able article upon the process of preserving wood, invented by our American genius, Louis S. Robbins. According to my recollection, he proposes the use of coal tar and other oleaginous substances in vapor. It seems to me that these vapors will be found as hot as hot air or as superheated steam, that they will permeate the wood as readily, and more effectually destroy the parasites, parasitic germs, or the albuminoids referred to.

Now, coal tar is about thirty per cent creosote—which, as its very name imports, is an antiseptic, that is, preservative against putrefaction and decay. This creosote, in superheated vapor, will permeate the wood thoroughly, and destroy, not only by its heat but by its inherent poison, all the destructive parasites and other infusoria, and, at the same time, prevent putrefaction, and, besides, the wood, being thus saturated with a deadly poison, will be protected against any attack from the parasitic infusoria which might originate after the treatment.

Then, by the heavier oils eliminated by distillation, the wood is saturated and completely primed, and the fiber is thus protected from the oxygen and moisture of the atmosphere, as recommended by Dr. Ure. The ancients were accustomed to preserve both vegetable and animal forms and substances by a process that rendered them so far imperishable that many of them, in spite of parasites, have come down to us in a surprising state of preservation. Specimens may be found in museums of Egyptian and other antiquities, in which even three thousand years have neither obliterated the outlines of mortality, nor destroyed the cerements that inclose them. They employed bituminous substances in their embalming or preserving process, and, as we believe, in the shape of vapor, while others have vainly attempted the same results with metallic solutions. Bethell, of England, and Louis S. Robbins, the American inventor, are the only two who have resorted to the application of bituminous substances, Bethell using them in liquid form, while Robbins applies them more effectually in the shape of vapor.

So far as we are able to judge, the process of Mr. Robbins is the nearest approach to the treatment resorted to by the ancients. *

New York, Sept. 20, 1866.

Chimney Drafts.

MESSRS. EDITORS:—Some facts in my experience compel me to believe that Prof. Horsford, as quoted in your issue of Sept. 8th, page 160, has not given the true reason for the diminished draft of chimneys in very hot weather. As foreman of mining claims in Grass Valley, in 1855, the question of fresh air for the workmen, often a serious one, involving heavy expense, compelled me to familiarize myself with the conditions on which increased or diminished draft depends. The air from our adit level, one-fifth of a mile long, was stopped off from the hoisting shaft, 120 feet deep, and conveyed in a large wooden pipe to the work, several hundred feet further under the hill, and 200 to 230 feet below the surface. In this way the hoisting shaft was made to act as a chimney; now what made it draw? The temperature in the "diggings" was nearly constant the year round. During the night (the nights are very cold in California), a candle held at the end of the pipe indicated a strong current of cold air flowing along the level back through the works and up the shaft. After sunrise the draft became less and less, and ceased entirely whenever the temperature outside was the same as that in the diggings. During the heat of the day a current flowed down the shaft and out at the level, and the hotter the day the stronger the current.

Our supply of fresh air was best when the thermometer indicated the greatest difference of temperature between the air in the diggings and on the outside; the draft being up the shaft when the air was coldest outside, and down when it was warmest.

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The interior of the house is often cooler during the heat of the day than it is outside, hence a current naturally flows down the chimney and out under the door. This downward current often gives trouble when the fire is being started. If the "upward currents on the outside of the house, arising from the heated surface of the roof and walls, draw the air outward by friction through cracks, open doors, etc.," why do they not draw it out of the chimney also, thus increasing rather than diminishing the draft?

It seems to me that the diminished draft of chimneys in very hot weather is due, first, to the tendency of the air in contact with the cooler surfaces within the house, to flow out under the doors, thus creating a draft down the chimney; second, to the diminished relative difference between the specific gravity of the air outside and that of the rising column of hot air within the chimney—the force of the draft depending entirely on such difference. Just as, other things being equal, a balloon will rise with the greatest force when there is the greatest difference between the specific gravity of the inclosed gas and that of the outside atmosphere.

J. W. PIKE.

Windham Station, Ohio.

Fire and Sunshine Experiments.

MESSRS. EDITORS:—Our furnace No. 1 weighed 11 lbs., 6 oz. No. 2, 11 lbs., 10 oz. They were both of the same pattern and by the same maker. We dried in an oven 24 lbs. of charcoal, allowed 12 lbs. to each furnace, used 12 oz. of wood and shavings, and half an ounce of spirits of turpentine to each furnace for kindling. The furnaces were open on the top. We started the fires simultaneously at 11 o'clock, A. M.; thermometer 96 degs. in the shade; the day was calm. Furnace No. 1 was placed in the direct rays of the sun, and No. 2 in the shade. Both furnaces were placed on benches 14 inches from the ground.

No. 2 was re-weighed at 11 o'clock and 27 minutes. No. 1 at 11 o'clock and 29 minutes. No. 2 consumed 15 oz. more fuel in the shade in 27 minutes than No. 1 did in the direct rays of the sun in 29 minutes.

The next day being favorable, the experiments were reversed. Thermometer 96½ in the shade. No. 1 furnace was placed in the shade, and No. 2 in the direct rays of the sun, and the experiments were carefully repeated, with the same results.

We conclude, therefore, that the cause of the difference in the consumption of fuel arises from the rarefaction of the air, there being even less oxygen in a given bulk in the sunshine than in the shade. The electrical state of the air may have something to do with these experiments, but we have no facts at present to prove it.

It is often said that when the fire burns brightly the family of the house are cheerful and happy. These two effects are produced by one cause, viz., the density of the air. Our lungs are physical furnaces; and the health and natural heat of our bodies depend as much upon the consumption of oxygen, as they do upon the consumption of food. The lungs, therefore, receive more oxygen with every inspiration in cold weather, than in warm. When, therefore, the air is cold, dry, and dense, fires will burn brightly and freely, and man will feel cheerful, and be more genial in his conduct.

As you published Prof. Horsford's experiments on this subject, I am induced to beg the same favor, so that we may draw out similar facts from other experimentalists. JAMES QUARTERMAN.

New York City, July 18, 1866.

[From our own Correspondent.]

FOREIGN SCIENTIFIC NEWS.

LONDON, Aug. 18, 1866.

Scientific news during the past week has been at a minimum. The Nottingham meeting seems still to absorb public interest, and in the general paucity of such information we are anxiously looking forward to the Congress of the Social Science Association, to be held at Manchester in the early part of next month. Great preparations are being made for this meeting, and highly interesting proceedings are anticipated.

The complete success of the Atlantic cable has occasioned the formation of several rival companies, designed to break up this monopoly, as it is even now characterized by many. In addition to the projected line over Behring's Straits, and another from Spain to Florida, via the West Indies, both of which are owned by Americans exclusively, there is the new English enterprise of completing telegraphic communication by means of several short lengths of cable between Scotland, the Faroe Islands, Iceland, Greenland, and Labrador. The route has been thoroughly and efficiently surveyed, and a contract has been made for duplicate cables for the whole distance of nearly four thousand miles.

One of the results incident to the successful recovery of the lost cable, is the fact lately published that the *Great Eastern* is thereby entitled to a large amount of salvage money, so that at last even she may prove a profitable invention and enrich her stockholders.

It is stated that the directors of the cable company are about completing a contract for a term of years with the Associated Press whereby the American papers are to be furnished with a daily telegram of forty words, for which the neat little sum of $110,000 in gold is to be paid annually, that is, $350 is daily to be paid for what can easily be printed in five lines.

The project of Mr. Hawkshaw, for tunneling the channel—which plan, by the way, is nothing new, but has been regularly proposed at intervals for many years past—meets with a counter project in a proposed international railway bridge, composed of pontoons, reaching from Calais to Dover, a distance of twenty-two miles. The bridge is to have several draws to allow the passage of vessels, is to be two hundred and fourteen feet in width, and to be constructed at a cost not exceeding sixteen millions of pounds sterling.

The water supply of London justly occupies a large share of public attention, for it is a most important subject for public consideration. The most feasible plan for furnishing the city seems to be the one proposed by Mr. Fuller, an English engineer of note. By his plan water is to be conveyed from near the source of the river Wye, in North Wales. The area of water shed of this river is one hundred and eighty thousand acres, with an available rainfall of sixty inches per annum. Mr. Fuller estimates the total cost at seven millions of pounds sterling.

M. A. C.

An Opportunity for American Gun Makers.

From our foreign advices we learn that Victor Emanuel, having failed in obtaining the Prussian needle gun for his army, has decided to invite inventors and manufacturers of fire-arms throughout the world to present their systems and specimens for trial, whether they relate to an entirely new weapon, or the conversion of the present musket. A special commission is to be appointed to test, examine and report upon the models, and decide which shall be adopted.

This is certainly an excellent opportunity for our inventors to achieve a fortune for themselves and reflect credit upon American enterprise and ingenuity. This trial, in connection with the great French Exposition, will furnish a means of introducing to Europeans many of our improvements, and of giving us the position, as a mechanical and manufacturing people, which our progress deserves. Probably the details of the applications will soon be made public, and we hope to see our inventors and manufacturers improve the opportunity.

The Grasshopper Scourge.

The Kansas farmers in Brown county and the adjacent territory, appear to have been lately subjected to a plague similar to those inflicted on Pharaoh. The obstinate grasshoppers appeared in countless numbers, covering a track twelve miles in width, and consuming almost all vegetation. The Marysville *Enterprise* says:—

"They alighted upon fields, gardens, fruit trees, and everything green or eatable, and, like a march of two hundred and fifty army corps, devoured every thing they touched. This whole country has been taken by them, and the rear guard is still with us, guarding what vegetables and green leaves the army has left. Farmers are seriously alarmed lest the corn will be totally devoured. They seem to be passing in a southwest direction."

Notes and Queries

S. N. T., of Md.—The adhesion of the metal in electroplating, depends mostly on the careful cleaning of the matrix. Some electro-platers give the article to be plated a thin coating of quicksilver before immersion in the cyanide. For coating with quicksilver, the carefully cleaned article is immersed for a moment in a weak solution of nitrate of mercury, and is then well rinsed in water. Failures in plating are often due to a want of harmony between the strength of solution, intensity of the battery, etc.

M. C. B., of Ill.—Shellac will probably prove to be the best cement for your purpose. If you can use it without dissolving, the joint will be more perfect.

S. M. H., of N. Y.—The substitute for nitric acid in Grove's battery, to which you refer, is a strong solution of bi-chromate of potash to which has been added sulphuric acid.

W. S. P., of N. Y.—First, We prefer to express no opinion in regard to the reliability of the paper to which you refer. Second, Brass, if burnished after polishing, will retain its luster better than if only polished. Still, it will tarnish in time, however close the particles of the surface. Third, Eight ounces of madder, four of fustic, and three ounces of logwood infused in one gallon of water applied hot; then an infusion of two ounces of nutgalls in one quart of water, after the first application is dry, will stain an imitation of black walnut. The proportions may be varied at will. Fourth, A dealer in metals could furnish you the number of the thinnest steel of commerce

———, of N. Y.—Send to Henry Carey Baird, 406, Walnut street, Philadelphia, stating the sort of mechanical books you need, and he will furnish you with what you want.

T. M. R., of Ala.—A vessel filled with hydrogen gas is heavier than one whose interior is a perfect vacuum.

R. C. N., of Ky.—Coal oil, or petroleum, is totally unfit for a hair dressing. By reference to page 397, Vol. XIV, current series, you will find a reply to a similar query.

A. V., of Pa.—We know of no depilatory preparation that is not injurious to the skin. Sulphuret of arsenic, a rank poison, is sometimes used, and so is lime, perfumed. Both are hurtful.

G. A. A., of Mass.—If you wish to convey steam 175 feet under ground, protect your pipe with hair felt and inclose the whole in a board box, packing the pipe in spent tan, sawdust, straw, or fine charcoal.

R. E. C., of Vt.—The advertisement you refer to appears to be a catch-penny affair. Send to H. C. Baird, 406 Walnut street, Philadelphia, for catalogue of books.

W. E. S., of Conn.—In our issue of Sept. 15th, we gave all the information we possessed in relation to the "Zopissa iron cement." At present its ingredients are a secret.

NEW INVENTIONS.

The following are some of the most prominent of the patents issued this week, with the names of the patentees:—

CARD CASE.—F. A. LAMONTAGNE, Montreal, Canada.—This invention consists in the construction of card cases with a combination of springs and slides for the discharge of a card at a time without opening the lid, by simply pressing a slide on the top with the finger. It is designed for the use of ladies especially.

MACHINERY FOR WASHING WOOL.—JOHN PETRIE, Rochdale, Eng., and JAMES TEAL, Towerby, Eng.—This invention relates to that class of machines for washing wool and other fibrous materials, in which the said materials are placed upon a feed apron by which they are delivered into a vat or other vessel and are agitated therein, at the same time being moved forward to the other end of the said vessel, where they are lifted out of the fluid by a drum, armed with movable prongs, which at the proper moment retreat so as to deliver the material unto an endless apron, from whence they are taken by a pair of squeezing rollers.

CIPHERING MACHINE.—SAMUEL J. KELSO, Detroit, Mich.—This invention relates to a machine which can be used for adding, subtracting and multiplying figures of any desired magnitude, with the greatest ease and facility.

PUMP.—LOUIS DRESCHER, Matanzas, Cuba.—The object of this invention is to construct a pump which can be used in a very deep well, and which is so arranged that it is not liable to burst from the high pressure to which it will be exposed, and that it does not become choked by stones or other material dropping down in it. It is also so constructed that it can readily be raised out of the pump, and that easy access can be had to its valves.

ARTIFICIAL LIMB.—JOSHUA MONROE, New York City.—This invention consists in the arrangement of elastic straps in combination with an artificial leg or arm, to be secured to a stump below the knee or elbow joint in such a manner that the side irons can be dispensed with, and thereby the weight of the limb is reduced, and furthermore said straps can be readily so adjusted that the limb is drawn up tight in any position to which the joint is brought.

BORING ATTACHMENT TO TURNING LATHES.—C. E. MCBETH' Hamilton, Ohio.—This invention is an improvement in boring attachment to turning lathes, by means of which holes can be made round, smooth and straight. And it consists in combining a thimble, bush, and cap with each other, with the hollow spindle, and with the mandrel of the lathe.

MANGER.—JONATHAN JOHNSON, Kent, Ind.—This invention has for its object to furnish an improved manger, which may be kept

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free from short hay, chaff, etc., and by which the grass seed may be separated from the short hay and chaff, so that it will be ready for sowing when taken from the manger.

BUTTON AND FASTENING.—ARTHUR WM. BROWNE, Brooklyn, N. Y.—This invention has for its object the construction of a button and fastening, in such a manner that the button may easily be attached to a dress, and be firmly held thereon, without the use of sewing; and that it may be detached at will from the cloth by simply pressing upon a small stud projecting above the surface of the button, thus preventing the tender and fine wire spring fastening from being easily destroyed.

SADIRON HANDLE.—FR. REHORN, New York City.—This invention relates to a movable handle for sadirons, said handle being attached to the iron by a dovetail socket, and held in position by a lever catch which is pivoted to one of the standards of the handle, and which, when the handle is in position, catches over a cam and locks the handle firmly to the body of the iron. The main part of the handle is cast in one piece, the standards being united by a cross-bar, to which the wooden handle is secured by simple pins, whereby the construction of the whole is greatly simplified and its cost is reduced to proper limits.

LAMP BURNER.—GEORGE J. CAPEWELL, West Cheshire, Conn.—This invention relates to that class of lamp-burners which are provided with draft chimneys, and has for its object the lighting of the wick without the necessity of removing the chimney from the burner, and at the same time have the wick tube, when the lamp is lighted and in use, in the proper relative position with the cone or deflector, so that a proper illuminating flame may be obtained.

GAS APPARATUS—N. TREADWELL, New York City.—This inventionrelates to a method of fitting dry diaphragm gas holders, and distributing the gas throughout a boat. It consists in pumping the gas directly into the holder without the use of atmospheric air, and by a simple change of valves use the same pipe for forcing the gas to the burners throughout the boat, so that the pump acts as a regulator as well as a pump, and thereby the possibility of the lights being put outby any motion or jar of the boat is prevented.

STEAM VALVE.—DAVID SEXTON, San Gabriel, Cal.—This invention consists of a thimble-shaped valve, provided with a transverse partition and fitted on a central spindle, which is held in position by a suitable temper screw, in combination with a cylindrical valve chamber and with suitable steam and exhaust ports situated on opposite sides of the transverse partition in such a manner that by said partition the pressure is separated from the exhaust end of the valve and thrown entirely on a center or pivot, and a valve is obtained which worse free and easy, and the position of which can be regulated from the outside.

BROADCAST SEEDING MACHINE.—W. S. COFFMAN, Coldwater, Mich.—This invention relates to a broadcast seeding machine of that class which are designed to be carried by the operator and worked by him while being carried.

BALING PRESS.—C. C. CONVERSE, New York City.—This invention relates to a press designed for compressing substances for baling, more especially cotton. The object is to obtain a press which will be simple in construction, economical to manufacture, and quite portable or of limited dimensions, and still operate with great power and efficiency, without injuring the fiber of cotton or other substances operated upon.

DEVICE FOR SOWING MANURES.—H. S. PALMER, Norvell, Mich.—This invention relates to a device for sowing plaster and other pulverulent manures, and it consists of a shaft provided with a right and left screw, and fitted in a suitable box, having a slide at its bottom for the purpose of regulating the discharge of the manure, a hopper being placed on the box, and the latter secured to the rear end of a wagon, whereby the manure, as the wagon which contains it is drawn over the field, may be sown or distributed upon the soil in an even manner, and with very little labor.

RESPIRATOR.—T. A. HOFFMAN, Beardstown, Ill.—The object of this invention is to provide a convenient and economical article or apparatus for filtering the air which is inhaled in breathing.

PRUNING INSTRUMENT.—G. F. WATERS, Waterville, Me.—This invention consists in the employment, in connection with a proper shaped hook for catching hold of the twig or branch, of an eccentric cutter operated by a hand lever suitably connected therewith.

ROOFING.—WM. GILBERT, Detroit, Mich.—This invention consists in the employment of a layer of long fibers of swamp grass, hemp, straw, or any other tough, fibrous material placed between the layers of felt, the raw fibers not to be woven into cloth, but spread in so as to form a net work, and put together by a cement. It also consists in the employment or use in the making of roofs of a cement consisting of distilled coal tar and common slacked lime.

REFLECTOR FOR LANTERNS.—W. A. BUTLER, New York City.—This invention consists in a novel combination and arrangement of reflecting surfaces for lanterns, whereby the reflection of light through the glass or open front of the lantern case is greatly augmented and more concentrated than with the ordinary mode of arranging such reflecting surfaces.

HAY AND STRAW KNIFE.—DANIEL FASIG, Rowsburg, Ohio.—This knife or cutting device is for cutting hay and straw from the stack, and is designed as an improvement over the angular knives now in use for such purpose.

BRICK MACHINE.—COLLINS B. BAKER, Troy, N. Y.—This invention relates to a mechanism for scraping off and leveling their upper surfaces after the molds have been shoved from underneath the press box. Its object is to obtain a simple device for the purpose and one which may be operated rapidly and in a perfect manner; the clogging of the strike, which has a reciprocating movement, being effectually prevented and the strike only allowed to act upon the molds in one direction so as to scrape the superfluous clay off from the molds at the end of the machine.

DEVICE FOR MOVING CARS ON THE TRACK.—J. W. PETTENGILL, Rockford, Ill.—This invention relates to a device for moving cars on the track, and is designed to supersede the pinch bar, the implement now used for such purpose.

CORN PLANTER.—J. S. RINKEL, Geneseo, Ill.—This invention relates to a device for dropping and covering corn, and it consists in a corn-dropping mechanism applied to a coverer, in such a manner that by a simple manipulation on the part of the operator the seed may be dropped and covered at the points where the furrows intersect each other, the field being furrowed both ways previous to the dropping or planting of the corn.

WATER WHEEL.—SIMEON SHERMAN, Weston, Mo.—This invention relates to a horizontal water wheel of that class which are operated under the direct and reacting power or force of the water, and it consists in a peculiar construction of the scroll and buckets, and in the manner of applying the buckets to the wheel.

CAR WHEEL.—E. S. ROBINSON, New York City.—This invention has for its object the obtaining of a strong and durable car wheel by a very simple and economical mode of construction. It consists in having the body or main portion of the wheel of cast iron and composed of two plates of disk form, the convex surfaces being at the outer side, said plates being connected at their peripheries by cross pieces, the two plates and cross pieces being all cast in one piece. The tire or tread of the wheel is of wrought iron or steel, and is secured upon the body or main portion by means of rivets.

SHEEP HOLDER.—D. R. REED, Orangeville, N. Y.—This invention relates to a machine for holding sheep while being sheared. It consists in using, in connection with a stationary or fixed bed piece, on which the body of the animal rests while being sheared, two clamp wheels placed on screw shafts and a head rest, whereby the sheep may be readily adjusted in proper position and turned as required during the operation of shearing.

SEEDING AND SOD-CUTTING MACHINE.—J. M. CARR, Omaha City, Neb. Ter.—This invention relates to a combination of a seeding and sod-cutting machine, whereby the seed may be sown and the od cut and the earth pulverized so that a fine friable mold will cover the seed.

TWEER IRON.—BENJAMIN FISH, Mechanicsburg, Pa.—This invention furnishes an improved tweer iron for blacksmiths' use, by means of which the size of the fire may be regulated, according to the requirements of the work; to which the cinders will not adhere, and which will not leak.

LADY'S SKIRT.—DWIGHT M. CHURCH, Derby, Ct.—The object of this invention is to furnish a lady's skirt the lower part of which may be detached when soiled, and replaced by a clean part, without its being necessary to wash the entire skirt every time its lower part becomes soiled.

STUFFING BOX AND PISTON-ROD PACKING.—CHARLES P. BENOIT, Detroit, Mich.—This invention relates to the packing of the piston and valve rods, plungers, etc., and consists of an arrangement of several novel devices which operate together effectively in preventing the escape of steam, water, or air, by keeping the packing next the rod smooth and in good order, while in constant use for a long time, without the trouble and expense of the frequent renewal of the packing generally required.

PAPER SHIRT COLLARS.—L. M. CRANE, Ballston Spa, N. Y.—This improvement consists in having a thin layer or sheet of gutta-percha or other material impervious to water, interposed between the layers of paper of the collar, whereby moisture is prevented from striking through the same, and the tearing of the fabric or material around the button-holes prevented in putting on and taking off the collar.

MACHINE FOR WASHING AND WRINGING CLOTHES.—EDWIN CHESTERMAN, Roxbury, Mass.—The object of this invention is to produce a machine for washing and wringing clothes which shall be compact in form, simple in operation, and easily operated. The invention embraces several particulars, one of which relates to the form of the cam by which motion is communicated to the working or pressing rollers of the machine.

ROTARY CULTIVATOR.—ANDREW THOMPSON, Ottumwa, Iowa.—This invention consists in so constructing a pulverizer that the teeth revolve upon the ground, and is so constructed that the cylinder in which the teeth are secured can be elevated or lowered, thus gaging the teeth to any desired depth.

ATTACHMENT TO PLOWS.—WILLIAM VEBER, Shingle Creek, N. Y.—The nature of this invention consists in constructing a device and attaching it to a plow, so as to prevent it from clogging under the beam, or in front of the colter.

COMBINED BOOT-JACK AND BLACKING CASE.—BERNARD DOUGLAS, New York City.—This invention relates to a very simple apparatus which will especially recommend itself to travelers, as it confines within a very small area a blacking box and brush, and when opened receives the shape and properties of a boot-jack of the common style.

Inventions Patented in England by Americans.

[We intend publishing hereafter a weekly report of all English Patents taken out by American citizens, all applications for the same, and such matters of interest as we may obtain from the "Commissioners of Patents' Journal."]

APPLICATION FOR LETTERS PATENT.

2,115.—METHOD OF STORING PETROLEUM AND OTHER OILS, NAPHTHA AND OTHER PRODUCTS OF DISTILLATION CONTAINING ESSENTIAL OILS.—A communication by Seth Haskell, New Bedford, Mass. August 27, 1868.

2,215.—MODE OF PREVENTING OXIDATION OF LEAD BALLS IN FIXED AMMUNITION.—A communication from Barton Howard Jenks, Bridesburg, Pa. August 28, 1866.

2,224.—REPEATING FIRE-ARM.—A communication from Oliver Fisher Winchester, New Haven, Conn. August 29, 1866.

2,229.—LOOM.—A communication from Thomas Robjohn, of New York City. August 29, 1866.

2,231.—BREECH-LOADING FIRE-ARM.—A communication from Barton Howard Jenks, Bridesburg, Pa. August 29, 1866.

2,233.—LIFTING JACK.—A communication from Augustus Bryant Childs, Rochester, N. Y. August 30, 1866.

2,236.—SOFTENING, DISINTEGRATING, AND BLEACHING VEGETABLE FIBERS.—James Montague Mellor, New York City, chemist. August 30, 1866.

2,242.—MACHINERY FOR HULLING AND CLEANING COFFEE AND OTHER BERRIES OR SEEDS.—A communication from William Van Vleek Lidgerwood, a citizen of the United States, now Charge des Affaires at Rio de Janeiro, in the Empire of Brazil. August 30 1866.

2,247.—APPARATUS FOR BORING BOILER TUBE HEADS, DRILLING ANGLE HOLES, OR CUTTING CIRCULAR GROOVES IN METALLIC SUBSTANCES.—A communication from James Miller, New York City. August 31, 1866.

2,251.—MACHINE FOR MAKING EYELETS.—Thomas Garrick, Providence, R. I. September 1, 1866.

2,261.—DETACHING BOATS FROM THEIR DAVITS.—A communication from Thomas Huntingdon, New York City. September 3, 1866.

2,264.—HOOP SKIRT.—A communication from Augustus James Colby, New York City. September 3, 1866.

PATENTS SEALED.

696.—ROTARY STEAM ENGINE.—Aaron Charles Baldwin, Boston, Mass. March 7, 1866.

704.—DREDGING AND ELEVATING MACHINERY.—Sylvester Franklin Schoonmaker, New York City. March 8, 1866.

719.—PUMP.—A communication from Asher Burr, Middletown, Conn. March 9, 1866.

720.—WEIGHING SCALES.—A communication from Daniel Hand Wilcox, New Haven, Conn. March 9, 1866.

827.—PROCESS OF AND APPARATUS FOR DISTILLING PETROLEUM AND OTHER MINERAL OILS.—A communication from Edward Braggins, Matthew Patrick Ewing, and Hiram Bond Everest, Rochester, N. Y. March 20, 1866.

874.—HOISTING APPARATUS.—A communication from Samuel Munson Longley and Andrew Conkey Getty, Hudson, N. Y. March 24, 1866.

1,164.—MACHINERY FOR MAKING TWIST DRILLS.—A communication from Andrew Reynolds Arnold, Newark, N. J. April 25, 1866.

PROVISIONAL PROTECTION FOR SIX MONTHS.

1,958—ROTARY ENGINES.—A communication from Truman Merriam and James Cushing, Waterloo, Wis.

1,995.—IMPLEMENT FOR THE USE OF BOOT AND SHOE MAKERS.—A communication from David Henry Barber, Cambridge, N. Y., and George Mellen Wells, Chicago.

1,997.—APPARATUS FOR RAISING AERIFORM AND OTHER FLUIDS.—A communication from Jeremiah William Foard, San Francisco, Cal.

2,001.—MACHINERY FOR CUTTING DOVETAIL JOINTS.—A communication from Frederick Woolcot Armstrong, Plainfield, N. J.

2,007.—MODE OF SECURING CORKS AND STOPPERS IN THE NECKS OR MOUTHS OF BOTTLES, JARS, AND OTHER VESSELS.—A communication from Arthur Barbarin, New Orleans, La.

2,017.—SEWING MACHINE.—A communication from George Lynden Jenks, Florence, Mass.

2,023.—APPARATUS OR MACHINE FOR REMOVING SEEDS OR STONES FROM RAISINS OR OTHER DRIED FRUIT.—A communication from William Emerson Baker, Boston, Mass.

2,156.—PROCESS FOR BLEACHING WITH THE AID OF HYDROSTATIC AND PNEUMATIC PRESSURE, CONJOINTLY OR SEPARATELY, WOOD, STRAW, AND OTHER FIBROUS MATERIAL, FOR THE MANUFACTURE OF PAPER PULP, AND FOR BLEACHING FLAX, HEMP, THREAD, YARN, FELTS, CLOTHS, AND OTHER FIBROUS AND TEXTILE MATERIALS.—A communication from Henry Jones and Duncan Farquharson, Rochester, and Isaac Cowles Cotton, Buffalo, N. Y.

PATENTS HAVING BECOME VOID.

1,941.—MACHINERY OR APPARATUS FOR CUTTING CORK, PART OF WHICH IS ALSO APPLICABLE TO CUTTING PAPER, CAOUTCHOUC AND OTHER SUBSTANCES.—Amos Pierce Chamberlain, New Orleans. August 25, 1859.

2,072.—MANUFACTURE OF CARTRIDGES.—Communicated from Albert Hook, New York City. August 20, 1853.

THE MARKETS.

The continued inflation of the currency, with the consequent want of confidence in the permanence of present values, and the knowledge that the governmental deposits of gold are increasing, have tended to delay the expected activity of the Fall trade. Purchasers confine their demands to stocks for immediate use, as do the people at large. Gold has risen about one per cent., but without exerting a very marked influence on prices generally. Breadstuffs have advanced, principally from the injury to crops at the West by the late storms. There are indications, however, of a reaction in the prices of these articles.

ASHES—Pots are in demand, but the supply is limited. Prices, $9 50 ℔ bbl. Pearls are nominal.

BRICKS—Common Hard, $10 50@$11 50. Croton and Philadelphia are $16@$17 for the former, and $40@$45 for the latter.

COAL—Foreign scarce and in demand. Liverpool Orrel, $18; Cannel, $20, delivered from yard; Lehigh, at Elizabethport, $7 50. Cumberland, at Georgetown, D. C., $5 50. Freight on Cumberland $2 25. Stove retails at $7 50@$8 50.

COFFEE—Demand for Rio. Laguayra, 18½@19c., gold; 26c., currency. Costa Rica, 20c. Java, 25½c.

COPPER—Detroit, 31@31½c.; Portage Lake, 31½c.

COTTON—There has been a continued active speculative and spinning demand, and prices have further advanced 1c. ℔ lb, and in some instances still higher prices have been paid. Ordinary, 30@31c.; Middling, 38½@40½c.; Good Middling, 41@44c.

FLOUR—Prices have materially advanced. Common brands rule from $10 50@$12 10; Ohio fancy brands $12 15@$12 20; Genesee extra, $12 60@$14 50.

GRAIN—Wheat advanced slightly. Milwaukee, $2 25@$2 31 Amber, $2@$2 88. Rye—$1 05@$1 08 for No. 1 Western; $1 25 for Canada. Barley, $1 35. Oats—50@55c. for Chicago; 55@58c. for Milwaukee; 57c. for Ohio. Corn—89c. for inferior Western mixed; 90@91c. for shipping, 96c. for choice White.

IRON—The market for Pig continues very firm, with moderate supplies and a steady fair demand for home use. The sales are 50 tons Gartsherrie Scotch at $47 50@$48 ex ship, and $50 from yard; 500 do. Glengarnock, from yard, $48, and to arrive $46 50; 600 do. No. 1 American, $48@$49; 100 do. No. 2 Allentown, $47 at Elizabethport. Trenton refined bar, $105@$107 50 ℔ ton cash. Swedes, in store, $170 ℔ ton.

LATHS—Are firm, with sales of Eastern at $4, three months.

LEAD—Pig is steady, with a fair demand; prices unchanged.

LEATHER—The market for Hemlock Sole is active, and prices are very firm. We quote Rio Grande and Buenos Ayres Light Weights, 33@34 cents; Middle do., 35@36; Heavy do., 36@37; California Light, 31@32; Middle do., 33½@34½; Heavy do., 34@35; Orinoco, etc., Light, 31@32; Middle do., 33@34; Heavy do., 29@32; Slaughter Upper in Rough, 31@33. Oak Sole is in light stock, and the market is firm. French and American Calf Skins are firm with a fair demand.

LIME—The market for Rockland is steady, with sales of 4,450 bbls., at $1 70 for Common, and $2 10 for Lump, cash. Rosendala Cement, $1 75, cash.

LUMBER—The market for Eastern Spruce and Pine is moderately active, with sales at $21@a$22 50, usual terms.

MOLASSES—Centrifugal and Clayed Cuba, part mixed, at 42@46c.; 204 hhds, 27 tcs., and 26 bbls. Cuba Muscovado, 48@51½c.; 474 hhds. 13 tcs., and 15 bbls. Barbadoes, at or about 58; 91 hhds. Trinidad, P. S., 45; 177 Nevis and Demerara, 50@72; and 65 hhds. and 50 bbls. Porto Rico, 62½@70, four months.

NAILS—Cut may be quoted 7@7¼c., the lower rates for lots of 500 kegs and over—8d., 10d., 3d., and 3d. Fine are very scarce—Clinch, 8½ (8d are very scarce); forged horse, 32; pressed do., 22@24: copper, 50; yellow metal, 32; zinc, 20; and wrought ship and boat spikes, 7@8. cash.

SUGAR—Prices unchanged from former quotations.

WOOL—The demand for low and medium fleece has been moderately active, but at the low prices previously current, and the market is rather weak for all kinds, except those suitable for combing, which are scarce and wanted at slightly improved quotations.

ZINC—9½c. less 4 per cent. for gold; 13½c., currency, for Lehigh.

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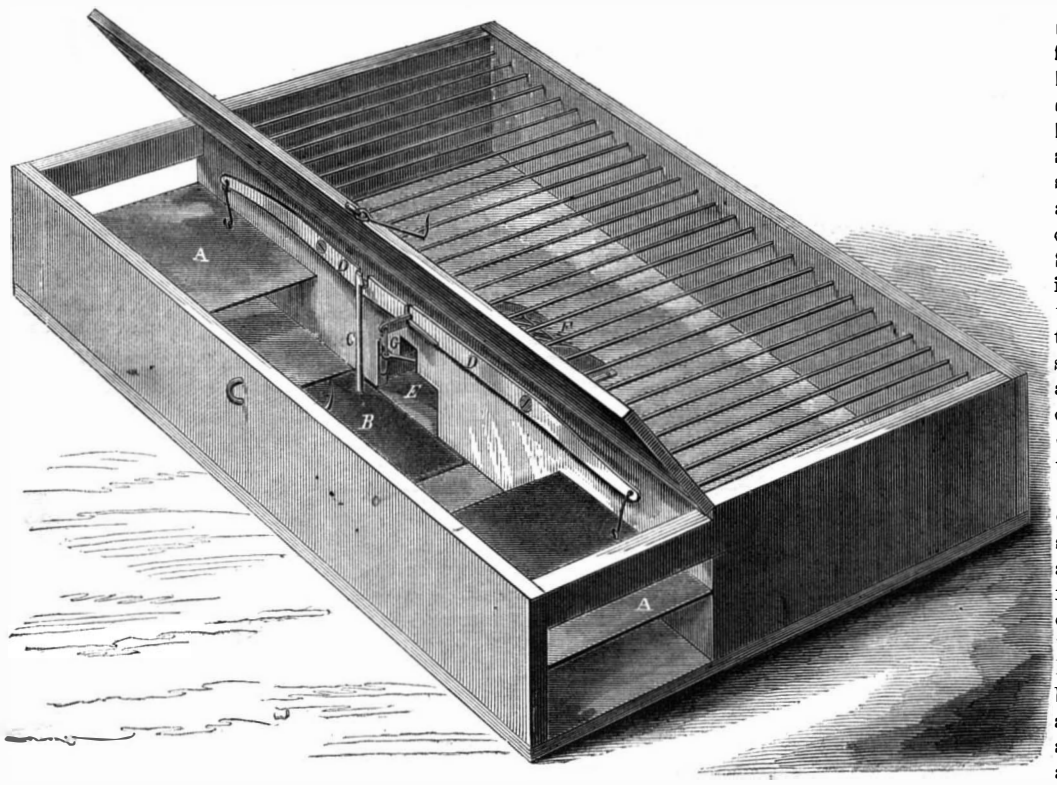
Self-setting Animal Trap.

"Set a rogue to catch a rogue," is an old axiom, and in the engraving under consideration it is attempted to be put into practice. The "varmint," after being securely penned, is the unconscious instrument of the imprisonment of his fellows. The animal enters at either of the doors designated by the letter A, which turn on pivots sufficiently above their centers to allow them to fall when released. The bait is hung on a hook, and to reach it the rat must step on the platform, B, which has a slight movement on pivots sufficient to tilt the catch, C, which engages the connected arms, D. These arms are connected with the doors and retain them in an open position when the trap is set. When the trap is sprung and the doors are closed, the animal, seeing light through the opening at E, looks for escape in that direction, and passes through, lifting the wire wicket, F, which rests its lower edge in an inclined position on the floor. The lifting of the wicket sets the trap again by the wire loop, G, and the process may thus be continued indefinitely.



ELLIS AND ALBERTSON'S ANIMAL TRAP.

Patented through the Scientific American Patent Agency, July 31, 1866, by Ellis & Albertson, whom address for further information at, Salem, Ind.

Improved Water Closet.

The convenience of a water closet in a dwelling, or any other inhabited building, is undeniable. Sometimes, however, from a defect in the principle of construction, or an unworkmanlike performance of the labor, it is more or less offensive, on account of the escape of unpleasant effluvia. The design of this arrangement is to make the rising of these gases impossible. It is claimed by scientific men that the offensive odors of water closets and cesspools are a prolific source of disease, especially when cholera and kindred complaints are prevalent. Any contrivance, therefore, which prevents them from impregnating the atmosphere is an improvement.

A is the box of the closet, and B the cover, the seat of which is hinged. B is held partially open by a spring in the usual manner. C is the valve of the water pipe, D, which is opened by the hand at E, and closed by the weight and lever, F. The pressure upon the seat opens the valve, C, permitting the flow of water into the pan or bowl. The discharge pipe, G, is cut across by a gland in which is a vertical sliding valve, H, attached to the rod, I, pivoted to the lever, J, which is operated by the head, K.

When the closet is in use the pressure upon the seat, B, depresses the head, K, and opens the discharge pipe so that the contents of the bowl have a free passage. When the pressure is removed the open spring, L, throws the valve, H, back into place. By this means the escape of gases is always prevented, both when the closet is in use and when not in use. The apparatus appears to be simple, effectual, and not liable to get out of order.

Fig. 1

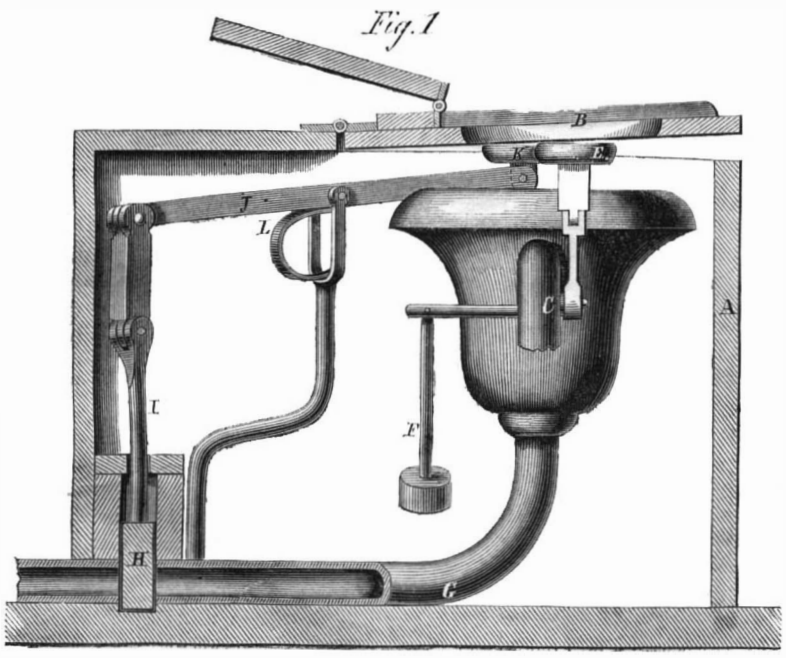
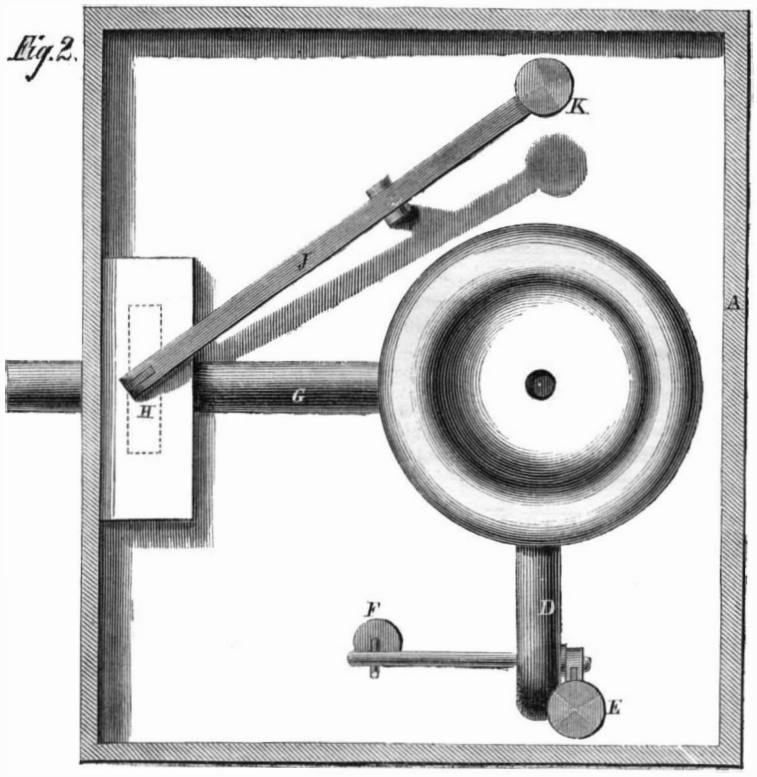


Fig. 2.



PETTIT'S WATER CLOSET.

Patented through the Scientific American Patent Agency, May 15, 1866, by Oliver S. Pettit. For further particulars address Pierson & Pettit, No. 3 Park Row, New York.

GOLD mining is carried on to quite an extent and with good results, in the State of Vermont.

The Broken Atlantic Cable.

The London *Spectator* tells the following singular and most interesting story:—

"Night and day, for a whole year, an electrician has always been on duty watching the tiny ray of light through which signals are given, and twice every day the whole length of wire—one thousand two hundred and forty miles—has been tested for conduction and insulation. * * * The object of observing the ray of light was of course not any expectation of a message, but simply to keep an accurate record of the condition of the wire. Sometimes indeed wild incoherent messages from the deep did come, but these were merely the results of magnetic storms and earth currents, which deflected the galvanometer rapidly, and spelt the most extraordinary words, and sometimes even sentences of nonsense, upon the graduated scale before the mirror. Suddenly, last Saturday morning, at a quarter to six o'clock, while the light was being watched by Mr. May, he observed a peculiar indication about it which showed at once to his experienced eye that a message was at hand. In a few minutes afterward the unsteady flickering was changed to coherency, if we may use such a term, and at once the cable began to speak, to transmit, that is, at regular intervals, the appointed signals which indicated human purpose and method at the other end, instead of the hurried signs, broken speech, and inarticulate cries of the still illiterate Atlantic. After the long interval in which it had brought us nothing but the moody and often delirious mutterings or the sea stammerings over its alphabet in vain, the words 'Canning to Glass must have seemed like the first rational word uttered by a high-fever patient when the ravings ceased."

THE mammoth Canada cheese is to be exhibited at the Paris Exhibition.

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THE

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VOL. XV., No. 15, [NEW SERIES.] *Twenty-first Year.*

NEW YORK, SATURDAY, OCT. 6, 1866.

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THE ATLANTIC TELEGRAPH---ITS PRESENT AND PROBABLE USES,

The last laid Atlantic cable has been in successful operation about two months. It has, as yet, shown no diminution of its conducting power, and the recovery and employment of the lost cable serves to give additional hope that the permanency of telegraph communication with the old continent can be assured. Now, the question arises, why cannot two cables be laid at the same time, instead of confining the work to the laying of one? Or why not lay a cable containing a number of conductors? In our issue of Aug. 4th, we gave engravings of a cable composed mainly of copper and an insulating material, which, the inventor claimed, was capable of transmitting six messages simultaneously. It may be that this plan in practice would be inefficient, but possibly some plan on a similar principle might be devised, by which the laying of one cable would insure the connection of the two continents by several independent conductors. If this is impracticable, is it not possible to lay two cables lighter than the present one, but possessing sufficient strength for service, so that the *Great Eastern* might take on board the double line and deposit both at the same time? We believe the project is feasible and within the resources of science.

The influence of the present telegraphic communication with Europe may not be, as yet, sufficiently marked to enable us to judge fairly of its future possibilities; but it is certain that it has already given a confidence to our business transactions and imparted a healthy tone to our commercial relations. Certainty has taken the place of conjecture, and diminished the opportunities for and discouraged the attempts at wild speculation, while, at the same time, it has aided the legitimate efforts of business men on both sides of the Atlantic. As the use of the telegraph becomes more general, by a reduction of the tariff rates, and by the facilities of communication afforded by a double line, we may expect increased life and energy will be infused into our trade.

In the diplomatic relations between this country and the nations of Europe the telegraph is destined, we think, to play an important part. By it mistakes can be rectified, misunderstandings corrected, and unpleasant complications avoided.

Occurrences trifling and unimportant in themselves, are often made by journalists the means of exciting the passions and arousing the prejudices of the people. The European mails bring us accounts of speeches, and of the action of Parliament, the opinions of influential men and the intentions of those in authority, which are sometimes misleading and erroneous, the error being strengthened by editorial remarks in prominent journals. Before the next mail arrival the subject has been debated and discussed in the journals all over the country, passions inflamed, antipathies renewed, and the public mind put into a ferment. The telegraph, in such a case, will prove a ready means of correcting false impressions before they have taken root in the popular mind.

But with this pleasing aspect of the matter comes another of grave import. Both *termini* of the cable are on English territory. In case of a hostile feeling between the United States and England, she could cut off the communication between this Government and its agents in Europe, while at the same time she would be in almost instantaneous communication with her vast naval and military depots and arsenals on our coast and frontier, as Halifax, Bermuda, and Quebec. Still, in case of war we might easily raise and cut the cable, so that England could derive no benefit from it which she denied to us. There may be, therefore, no reason for anticipating national danger from the cable, but much for believing that the cause of civilization and the advancement of the whole human family will result from its success.

PROGRESS OF THE PACIFIC RAILROAD.

On the first of September the Pacific Railroad was completed from Omaha City to beyond Fort Kearney, in Nebraska, a distance of over two hundred miles. The rate of progression is from forty-five to fifty miles a month, so that it is believed that another year will stretch the road to the Rocky Mountains. The route is from Omaha City, along the banks of the Platte river, the same course traveled by the pony express. The surface of the country is highly favorable to the work, being smooth, hard, dry, and almost level. A better road-bed could not be desired. The graders are at work along the third hundred miles, and will finish the fourth this fall.

At the other end the work is progressing rapidly —a work that will be considered one of the monuments of man's perseverance and industry. We have before alluded to the immense difficulties to be overcome in the construction of the road through and over the Sierras, and the success in surmounting them. To exaggerate the importance of this transcontinental highway is almost impossible. To a certain extent it will change the relative positions of this country, Europe, and Asia. The track of an army is a track of desolation. Its passage impoverishes and scorches the country through which it moves. Not so the track of commerce. That country which stands between the place of production and the mart of sale, which is the highway over which the wealth of nations must travel, enjoys a Danæan shower. This was the secret of the prosperity of Palmyra, the city over which the proud Zenobia reigned—it built Alexandria, sustained Carthage, and made Venice the strongest republic of the world.

With the completion of the Pacific Railroad, instead of receiving our goods from India, China, Japan, and the "Isles of the Sea," by way of London and Liverpool, we shall bring them direct by way of the Sandwich Islands and the railroad, and become the carriers, to a great extent, for Europe. But this is but a portion of the advantages of this work. Our western mountains are almost literally mountains of gold and silver. In them the Arabian fable of Aladdin is realized. To-day it costs almost a competence to reach them, and live among them for a year or two, until the labors of those weary months begin to make a visible return. Food, clothing, machinery, implements, and all other necessaries are costly in the mining regions of Colorado, Nevada, and Arizona. This cost is largely that of transportation. Let the road be completed, and the comforts as well as the necessaries furnished by Asia, the manufactures of Europe, and the productions of the States, can be brought by the iron horse almost to the miner's door, and in the production and possession of the precious metals, the blood of commerce, we shall be the richest nation on the globe.

But the substantial wealth created by the improvement of the soil and the development of the resources of the country is a still more important element in the results of this vast work. Ease of access, facility of intercommunication, and encouragement to travel, will invite thousands of the crowded inhabitants of Europe and our Eastern cities, and build up towns and cities, and make luxuriant farms where now nature exists in almost undisturbed wildness.

COAL, ITS ORIGIN AND NATURE.

There can be no reasonable doubt that all coals, bituminous and anthracite, are of vegetable origin. By a powerful microscope the vegetable texture of the mass can be distinguished, not only in the softer qualities, but even in the hardest anthracite. We have seen specimens of indubitable jet yield to the power of the microscope and reveal the original grain of the wood or vegetable fiber. Peat is the first combustible form of coal, and if our peat beds, now sought after with so much avidity, and judged to be such mines of wealth, were suffered to remain undisturbed, they would, at some future period, become beds of coal for warming and lighting the winters and nights of future generations.

Coal is not a material belonging exclusively to past geological periods, but is in process of formation now, as may be proved by an examination of the "brown coal," well known in Europe and frequently met with here. Thin slices, which allow the light to pass through them, show to the naked eye the original vegetable structure. It is universally acknowledged that this "brown coal," or lignite, is an undeveloped coal, not yet subjected to the changes of years which would transform it into pure bituminous or anthracite coal. To be sure, time is required to change the disintegrated porous mass of vegetable fibers, roots, and tendrils, leaves and *lignum* to hard, brilliant, laminated, or crystallized coal. But nature works slowly. We find it difficult to understand her processes or to comprehend her infinite patience, which watches through unnumbered years and countless ages for the slow and gradual progression of her agencies. But it is certain that her transforming processes have not suffered an abatement of their original power by the discoveries of man. They still go on, and will as long as this globe and the universe endure.

It is possible that the present *furore* about peat will lead to the discovery of accelerating the action of unaided natural forces, so that this material may be made to give out as much heat-power as the concentrated coal, but we much doubt it. The principal fault with our coal is, that it combines with it elements deleterious to iron, whether in a state of fusion or merely subjected temporarily to its heat. Stoves, for instance, which are constructed to burn wood only, will last a life time or longer; but burn anthracite coal and the parts warp, and crack, and oxidize, until the stove, or that portion exposed to the direct action of the heat, must be renewed yearly, if not oftener. With the bituminous coal it is worse still. The grate, with a hot fire, yields and falls in pellicles, melted from the mass, until, in a short time, the most important portions of the contrivance are useless. To withstand the concentrated heat they must be made of extraordinary thickness.

In reducing ores, also, and especially in fusing iron, these components of coal are the cause of much trouble. They are foreign bodies, which have become incorporated with the original vegetable mass, and hold, chemically or mechanically suspended, sulphur, silicon, and other elements, which are detrimental to the metal.

There is no reason to disbelieve that all varieties of coal have a common origin. They are vegetable masses, which, mixed with inorganic particles, have undergone different degrees of mineralization, the more recent still retaining much of the volatile elements, the bituminous less, and the anthracite still less, until this will burn with but little flame and no smoke.

DURING the last ten years the value of the industrial products of Massachusetts has increased seventy-two per cent; the population during the same time, only three per cent.

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ISSUED FROM THE U. S. PATENT OFFICE

FOR THE WEEK ENDING SEPT. 25, 1866.

Reported Officially for the Scientific American.

☞ Pamphlets containing the Patent Laws and full particulars of the mode of applying for Letters Patent, specifying size of model required, and much other information useful to inventors, may be had gratis by addressing MUNN & Co., Publishers of the SCIENTIFIC AMERICAN, New York.

58,194.—MILK CAN.—Estes Abbott, Chagrin Falls, Ohio.

First, I claim forming the cylinder, A, bottom, D, and cover, fig. 5, each of whole or entire pieces, as herein set forth. when used in the manner and for the purposes specified.

Second, The bottom, D, constructed substantially as described, in combination with the body of the cylinder, A, and hoop, G, as and for the purpose specified.

Third, The cover, fig. 5, constructed as shown, and provided with the tube, J, as and for the purpose set forth.

Fourth, The hoop, fig. 6, constructed as described, to wit, straight on its inner edge, and curved on its outer edge, in combination with the body of the cylinder, A, as and for the purpose set forth.

58,195.—COMBINED BUTTON AND LOOP FOR TRACES.—Jacob Albert, Baltimore, Md.

I claim the herein described device, whereby the ordinary harness trace can be used with whiffletrees of different construction, as described, the same consisting of a beveled loop, curved shank, and button, formed in one piece, under the arrangement and for operation substantially as herein set forth.

58,196.—RAILWAY FROG.—E. G. Allen, Boston, Mass.

I claim the combination and arrangement of the plates, A and B, with their supports, E and F, whether made elastic or not, secured together substantially in the manner and for the purpose specified.

58,197.—DISTILLING OIL.—Samuel Andrews, Cleveland, Ohio.

First, I claim the fire chamber, C, and reverberatory chamber, F, in combination with the throat, C', and the openings, I, in the manner and for the purpose substantially as set forth.

Second, I claim the reverberatory chamber, F, in combination with the retort, A, as and for the purpose specified.

Third, I claim the flues, J, when separated from the walls of the retort by the wall, J', as and for the purpose set forth.

58,198.—CARRIAGE JACK.—Maurice Andriot, Mount Washington, Ohio.

I claim the key, F, formed with a straight back, f, and two oblique faces, F' F'', converging together at e, as and for the purposes specified.

58,199.—DARNING LAST.—George H. Babcock, Providence, R. I. Antedated Sept. 15, 1866.

I claim, as a new article of manufacture, a light, smooth last, or partial last, in the form of a box, substantially as described and for the purpose herein set forth.

58,200.—BRICK MACHINE.—Collins B. Baker, Troy, N. Y.

I claim the strike or scraper, K, operated from the rock shaft, J, as shown, and provided with the laterally adjustable wheels, L L, in combination with the ways, g g, beveled at their inner ends, as shown at h h, and having oblique bars, l l, at their front ends, and all arranged to operate in the manner substantially as and for the purpose set forth.

I further claim the strip, M, in combination with the scraper, K, substantially as and for the purpose specified.

58,201.—TRAP FOR REMOVING WATER FROM STEAM HEATING AND EVAPORATING APPARATUS.—Robert J. Barr, Philadelphia, Pa.

First, I claim the hollow journals, E E', vessel, H, beam, I, and weight, G, as and for the purpose specified.

Second, I claim the valve, V, pipes, C and E, and vessel, H, as and for the purpose described.

Third, I claim the pipes, E E' F F', vessel, H, and pipe, N, arranged and operating as set forth.

Fourth, I claim the chambers, e e', stop, a, valve, V, and pipe, C, in combination, for the purpose set forth.

Fifth, I claim, broadly, the herein described steam trap, when constructed and operating substantially as and for the purpose specified.

Sixth, I claim operating the valve, V, that is opening and closing the same by the accumulation and discharge of water, as specified.

58,202.—STEAM RADIATOR.—T. B. Belfield, Philadelphia, Pa.

First, I claim a radiator composed of a number of sections of the zig-zag form described, for the purpose specified.

Second, The combination of the above with the inclined ribs, for the purpose specified.

58,203.—COMPOSITION FOR FILLING THE PORES OF WOOD.—Christopher S. Benjamin, Kalamazoo, Mich.

I claim the composition for filling the pores of wood preparatory to varnishing, substantially as herein described.

58,204.—PISTON-ROD PACKING.—Charles P. Benoit, Detroit, Mich.

First, I claim the corrugated or grooved packing rings, D D, in combination with the elastic coil of packing or stuffing, E, the cup-lipped flange, G, the annular space around the piston rod, C, or the lubricating chamber, H, with its connected oil cup, I, and the screw bolts, K K, with the springs, b b, under the nuts, c c, all constructed, arranged, and related to each other substantially in the manner and for the purposes herein described.

Second, I claim the lubricating chamber, H, combined with the piston rod, C, the flange, G, and the packing rings, D D, substantially as and for the purposes herein described.

Third, I claim the cup-lipped flange, G, combined with the elastic coil packing, E, and the corrugated rings, D D, constructed and operated substantially as and for the purposes herein described.

58,205.—SIRUP STAND AND SODA FOUNTAIN.—Edmund Bigelow, Springfield, Mass.

First, I claim the combination of sirup jars with faucets, substantially as and for the purposes herein specified.

I also claim the employment of plastic gum, as herein set forth, for connecting the faucet with a sirup jar and case by means of the metallic bushing, gum and screws, substantially as described.

I also claim the corner stops, a, for holding the divided cover in place, so that either section can be raised, without the other part being displaced, substantially as specified.

I also claim the setting of the sirup jars, substantially as herein specified, and fixing the same in place by means of the projection at c, and the gum packing.

58,206.—ROTARY STEAM ENGINE.—Aaron C. Baldwin, Boston, Mass.

First, I claim the central disk, a, diminished in thickness toward the periphery, with its pistons, a1 a2, arranged thereon relatively to each other and to the correspondingly tapered abutments, C, substantially in the manner and for the purposes herein set forth.

Second, I claim the depression or groove, x, in the part, B3, for supporting the end of the abutment, and preventing the escape of steam past that point, substantially as and for the purposes herein set forth.

Third, I claim the within described pistons, arranged as specified, the same being of a tapering or wedge form, with the base of the wedge presented inward, and sliding on the fixed inner surface, B3, substantially as and for the purpose herein set forth.

Fourth, I claim the within described combination and arrangement of the reciprocating valve, R, and the four ports, m n P and Q, whereby the exhaust port is kept open during the whole revolution of the engine, while the steam port is opened and closed as required for the intermittent admission of the steam at each revolution, and adapted to allow of reversing, or working in the opposite direction, substantially as herein set forth.

Fifth, I claim the metal ring, V, and yielding ring, v, in combination with the disk, a'', and the inner cylinder, B3, for the purpose of preventing the escape of steam inward toward the shaft of the engine, substantially as herein set forth.

Sixth, I claim the adjusting screws, W, or their equivalents, in combination with the rings, V v, disk, a, and inner cylinder, B3, and adapted to adjust the compression of the elastic packing, v, substantially as herein set forth.

Seventh, I claim the recesses in the rubbing surfaces between the ports, m and n, so as to reduce the friction of the piston through that part of its revolution, substantially as herein set forth

58,207.—SHOE FOR CAR BRAKE.—James Bing, Philadelphia, Pa.

First, I claim the shoe, B, and sole, A, united together without the help of any key or bolt, and so that the sole, by this off-center tendency, resulting from the peculiar shape of lug, C, can remain constantly in close contact with its shoe.

Second, The combination of packing, z z, with lug, C, and shoe, B, for the purpose before described.

Third, The combination of shoe, B, sole, A, close clevis, R metallic lining, I, and packing, z z, the whole combined, constructed, and arranged substantially as above specified.

58,208.—WATER WHEEL.—W. H. Blackmer and E. R. Carpenter, Clermont, Iowa.

We claim the combination of the radial buckets, C C, of the wheel, B, blocks, C' C' C', water passage, D, all constructed and arranged in the manner and for the purpose herein specified.

58,209.—APPARATUS FOR CARBURETING GAS.—John F. Boynton, Syracuse, N. Y.

First, I claim an apparatus for carbonizing gas and air, and which I prefer to call a gas-light multiplier, as herein described.

Second, A detachable reservoir, to operate substantially as described, for filling the carbonizer with liquid.

Third, The filling reservoir, D, in combination with the cocks, J and K.

Fourth, The combination of ligneous material with fibrous material.

Fifth, The compound capillary action of ligneous material with fibrous material.

Sixth, The perforated base board, or its equivalent.

Seventh, The use of pegs supported from a base board.

Eighth, The arranging of the fibrous material parallel with the ligneous material, in the manner described.

Ninth, The slot in the top of the pegs for securing the fibrous material.

Tenth, The securing of the fibrous material at the bottom of the peg by its being driven with the peg into a perforation of the base board.

Eleventh, The combination of ligneous and fibrous material, producing a compound capillary action, attached to a base board, forming a cage, and so arranged that it can be placed in and taken from the reservoir or carbonizing chamber.

Twelfth, A compound perforated partition, so arranged as to divide the carbonizing chamber into an internal and external apartment.

Thirteenth, The arrangement of the compound perforated partition, that it may be removed and replaced in the carbonizing chamber without disturbing the cage

Fourteenth, A double partition, so arranged that the compound capillary action of the ligneous and fibrous material may take place between its walls.

Fifteenth, The making of these partitions of any material capable of producing capillary action.

Sixteenth, The use of capillary action of any material of which these partitions may be constructed.

Seventeenth, The using of ligneous material for a partition.

58,210.—HEMMING GUIDE FOR SEWING MACHINE.—Thomas W. Browning and P. C. Hard, Wadsworth, Ohio.

We claim the combination and arrangement of the hemmer, B, with the under slotted plate, the middle plate with its tongue, T, and the upper pivoted plate, D', as and for the purpose set forth and described.

58,211.—FISHING-LINE SINKER.—Leonard A. Burnham, Gloucester, Mass.

I claim the improved swivel hawse made of the parts, C D G, constructed, arranged, and combined with the spindle, B, and the sinker, S', substantially as above set forth.

58,212.—REFLECTOR FOR LANTERN, ETC.—Wm. A. Butler, New York City.

I claim the combination of the conical side reflector, A, the concave back reflector, B, and the lens, D, all constructed, arranged, and operating as and for the purpose specified.

58,213.—LAMP BURNER.—George J. Capewell, West Cheshire, Ct.

I claim the toothed holder tube, G, for the wick of a kerosene lamp, in combination with the bent spring, K, or its equivalent, and pinion, I, when arranged together, and with regard to the ordinary wick tube of such lamps, substantially as herein described, and for the purposes specified.

I also claim forming the air-opening, C, to the air chamber of a kerosene or other lamp, as herein described, and shown in the drawings, for the purposes set forth.

58,214.—SEEDING MACHINE, ETC.—J. M. Carr, Omaha City, Nebraska.

I claim the swinging or adjustable frame, I, attached to the axle, d, as shown, and provided with the cylinder, k, having knives or cutters, l, attached, in combination with a seed-dropping mechanism, all arranged and applied to a mounted frame, substantially as and for the purpose specified.

I further claim, in combination with the above, the adjustable wheels, J J, attached to the lower end of the frame, I, substantially as and for the purpose set forth.

58,215.—WRINGER AND WASHING MACHINE.—Edwin Chesterman, Roxbury, Mass.

First, I claim the combination and arrangement of the slotted frame, A, dovetail rail, F, spring bar, G, springs, A, fingers, K K', sockets, J, capped wringers, B, toothed wheel, D, and worm, E, substantially as described for the purpose specified.

Second, I claim making the shafts of the rollers of a skeleton, or spider, the angles between whose radial arms are filled in with blocks of larger size than the spaces, substantially as above described.

Third, I also claim the cams, E', made substantially as described, for giving a reciprocating rotary motion to the elastic rollers so as to produce friction on the clothes placed between them, substantially as set forth.

58,216.—RUNNING GEAR OF RAILWAY CARS.—Samuel B. Childs, Syracuse, N. Y.

I claim the adjustable collar, C, and set screw, D, and the metallic wedges or box, F, in the wheel, when arranged and combined with the car axle, as herein described and for the purposes set forth.

58,217.—INSULATING WIRE OF HELICES.—James J. Clark, Eastchester, N. Y., and Henry Splitdorf, New York City.

We claim making helices for electro-magnetic and magneto-electric machines from wire insulated by passing it through any powdered material, such as powdered glass, stone sand or paper pulp, after the wire has been passed through any sticky fluid and before the sticky fluid becomes dry, as hereinbefore described.

58,218.—GATE.—Baxter Clough, Amherst, Ohio.

I claim the gate, B, arranged and hung as specified, in combination with the guys, C C', plates, B', posts, A', and counter braces, D D', as and for the purpose set forth.

58,219.—BROADCAST SEEDING MACHINE.—W. S. Coffman, Coldwater, Mich.

First, I claim the operating of the revolving scatterer by means of gearing, arranged in the manner substantially as shown and described.

Second, I claim the inclined bottom, a, in combination with the valve, D, adjusted through the medium of the lever and gage, substantially as and for the purpose specified.

Third, The plate, d, to retain or hold the valve, D, in place, substantially as and for the purpose set forth.

Fourth, The combination of the box, A, with the frame, B, provided with legs, a, substantially as and for the purpose specified.

58,220.—SORGHUM EVAPORATOR.—Thomas Cole, Cedar Hill, Ohio.

First, I claim the process herein described, whereby the raw juice after being exposed to a high temperature immediately upon entering the evaporator then conveyed away rapidly to a precipitating chamber not exposed to heat, and finally introduced at the cool end and discharged at the hot end of the chamber, where the final boiling and separation take place, substantially in the manner and with the effect described.

Second, In combination with an evaporating pan, the precipitating pan, D, substantially as and for the purpose described.

Third, The evaporating pan, A, divided by the partition, a, substantially as and for the purpose described.

Fourth, The evaporating pan, A, constructed with two apartments in combination with the precipitating pan, D, substantially as and for the purpose described.

58,221.—MANUFACTURE OF GAS.—Joseph H. Cannelly, Wheeling, W. Va.

First, I claim the forcing of the petroleum or its products, viz: residuum and crude benzole, in about equal quantities, in conjunction with lime water, into the retort with a jet of steam, when the retort is charged with coal, substantially as described.

Second, Introducing the petroleum or its products, in conjunction with lime water, into the retort when charged with coal, by means of the pipes, F G, provided with seals or traps, substantially as described.

Third, The iron spout, C, attached to the manhead and employed to conduct the liquids back to the center of the retort, substantially as herein set forth, and for the purpose specified.

Fourth, The combination of oil and lime water for desulphurizing and purifying in the manufacture of gas from coal, substantially as described.

Fifth, Also introducing the petroleum or its products in conjunction with lime water into the retort, when charged with coal, by means of the common receiving pipe, E, inserted into the retort at or near the back end either with the seals, traps or steam jet, substantially as described.

58,222.—BALING PRESS.—C. C. Converse, New York City.

I claim the rock shaft, E, actuated by the levers, F, or other equivalent means, and provided with the extension pendent bar, G, having a roller, I, at its lower end, in connection with the follower at platen, C, screws, J J, and press box, A, all arranged to operate substantially in the manner as and for the purpose set forth.

58,223.—PAPER COLLAR.—L. M. Crane, Ballston Spa, N. Y.

I claim as an improved article of manufacture a paper shirt collar having a thin sheet or layer of gutta percha interposed between the layers or paper of which the collar is constructed or made, substantially as described.

58,224.—BAIL FOR KETTLES AND OTHER VESSELS.—Anson D. Crocker, Boston, Mass.

First, I claim, in combination with a bail or handle, adjustable clamps constructed and arranged to fit upon the rim of and hold the receptacle to which they are attached, as described.

Second, In combination with the above the vertical bands, g g, and horizontal band, k k, as described and for the purpose specified.

Third, Making the bands g g and k k adjustable by the means herein above described and for the purpose specified.

58,225.—SLATE FRAME.—David Cumming, Jr., New York City. Antedated Sept. 17, 1866.

I claim a slate frame when constructed with a miter joint, having a tongue and groove or similar device, and held together by means of a continuous screw, substantially as set forth.

58,226.—STOP MOTION FOR SPINNING MACHINES.—Lewis Cutting, San Francisco, Cal.

I claim the bar, J, and slide, , combined and operating substantially as and for the purposes described.

58,227.—UMBRELLA.—William Damerel, Brooklyn, N. Y.

First, I claim an umbrella held closed or shut by means of an elastic band placed around the stretchers of their frames, substantially as shown and described.

Second, I also claim rests, F, as arranged for holding the band or string, E, in its proper place, on or over the stretchers of an umbrella in all conditions, whether closed or extended, substantially as described.

58,228.—CHURN.—Francis Danzenbaker, Bridgeton, N. J.

I claim the combination of the tubular handle, A, adjustable stopper, B, or its equivalent, and valve, D, when constructed and arranged to operate substantially as set forth.

58,229.—MACHINE FOR ASSORTING POTATOES, COAL, ETC.—Mahlon D. Dickinson, Pitts' Grove, N. J.

I claim the crank shafts, A A, sieves, B B, and suspension rods, E E, when combined and arranged, as and for the purpose set forth.

58,230.—BOOT-JACK AND BLACKING CASE.—Bernard Douglas, New York City.

I claim a combined boot-jack and blacking case constructed by combining the two unequal parts of the case, A, with the hinges, a, blocks, f, and cover, d, substantially in the manner and for the purpose herein shown and described.

58,231.—RECLINING CHAIR.—J. B. Duane, Schenectady, N. Y.

I claim pivoting the seat bars to the front and back bars of the chair, by means of the transverse rods, A A, for the purpose described, in combination with the arms, g g, arranged directly over said bars, e e, and pivoted to the inner sides of the front and back bars, substantially as described.

58,232.—EXTRACTING CREAM FROM WHEY.—Kilian Egger, South Cortland, N. Y.

I claim the process above described for extracting the cream from the whey, substantially as above described.

58,233.—STOVE-PIPE DAMPER.—Norman J. Eldred, Chicago, Ill.

I claim the disk, A, with lugs, X X, cast upon it, and a square hole or opening cast in it, in which opening is placed a hoop, B, its axis being transverse to that of the disk, together with the damper plate, D, operating loosely between one side of the disk and the hook, the several parts being arranged and constructed as and for the purpose herein specified.

58,234.—BIT STOCKS.—Oliver Ellsworth, Boston, Mass.

I claim the arrangement of the jaws, C C, pivoted on the pins, D D, with spring, L, stationary screw, P, and traversing nut, G, the whole constructed as described for the purposes set forth.

58,235.—STUMP EXTRACTOR.—L. C. English, Corning, N. Y.

First I claim the derrick frame A A B, jointed at its upper end,

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and provided with an adjustable brace, as and for the purpose described.

Second, In combination with the derrick frame, A A B, I claim the pivoted foot at the end of the leg, B, of the frame, as and for the purpose described.

Third, I claim the block, E, and catch, e, so arranged as to render the brace adjustable to the angle formed by the supports, A A and B, and avoid a breaking strain on the supports, as described.

58,236.—EVAPORATOR.—Francis Farquhar and R. E. Doan, Wilmington, Ohio.

We claim a sugar evaporator having its fire box and flues arranged so as to be surrounded with the juice to be evaporated, substantially as and for the purpose herein specified.

We also claim the arrangement of the direct and return flues, C D D and E, in relation to the introduction and flow of the juice to be evaporated, so as to separate the impurities to be skimmed off, substantially as herein set forth.

We also claim the evaporating space, S''', between the flues, D D E, and the fire box, as described.

We also claim the flue connections, L L, between the fire box, B, and flues, D D, for the purpose set forth.

58,237.—STRAW AND HAY KNIFE.—Daniel Fasig, Rowsburg, Ohio.

I claim a cutting device for cutting hay or straw from the stack, A, having the tang, e, of the knife or cutter, c, fitted in it and operated by a lever, D, all constructed and arranged substantially as herein shown and described.

58,238.—TWEER.—Benjamin Fish, Mechanicsburg, Pa.

First, I claim the tongued grate, B, constructed and arranged as herein described, in combination with the air chamber, A, of the tweer, substantially as and for the purpose set forth.

Second, The cap, E, constructed as herein described, in combination with the grate, B, substantially as and for the purpose set forth.

58,239.—METHOD OF PROMOTING COMBUSTION IN FURNACES.—Clark Fisher, Trenton, N. J.

I claim the employment of fans or other suitable air engines, having pipes leading from them into the chimneys, and directed upward for the purpose of promoting the combustion of fuel in furnaces by forcing cold air directly into the chimneys at points which are above the heating surfaces, but near the base of the chimneys, at a greater velocity than that which would result from natural draft, substantially as described.

58,240.—VAULT COVER.—Frederick Fitzgerald, Cincinnati, Ohio.

I claim the vault cover or sidewalk plate, having the gutters, b, the diagonally scored and convex eminences, c, and corrugations, d, as and for the purpose set forth.

58,241.—INSTRUMENT FOR MEASURING DISTANCES.—Jones Frankle, Amesbury, Mass. Antedated September 3, 1866.

I claim the combination of the inclined plane, o, graduated with distances, and the telescopes, d and e, arranged substantially as herein set forth.

58,242.—MANUFACTURE OF KNIVES AND FORKS.—James D. Frary, New Britain, Conn.

First, I claim forming a bolster, a", upon a blade, a, having perforations in the center thereof through which the metal is poured to form a solid bolster substantially as described.

Second, Securing the handles, c, made in two parts, having holes therein to correspond with those formed in the blade, and countersunk so that the metal poured therein will firmly gripe the parts together, substantially as described.

58,243.—COMBINED SEEDER AND CULTIVATOR.—W. J. Freeman, Spring Fork, Mo.

First, I claim the combination of the hopper, C, and beam, C' with the slide, C2, and the levers, E and E' and lugs, n, on the wheel, B, when constructed as and for the purpose set forth.

Second, I claim the frame, A, and the wheels, B B', combined and arranged with cultivator hereinbefore described, substantially in the manner set forth.

Third, I claim the frame, A, and the wheels, B B', combined and arranged with the seed planter hereinbefore described, substantially in the manner set forth.

Fourth, I claim the posts, D', and the rock shaft, D2, of the plows, D, in combination with the frame, A, substantially as described.

58,244.—LANTERN.—Alonzo French, Philadelphia, Pa.

I claim the globe base, C, and the shell or case, B, combined and operating substantially as herein specified and described.

58,245.—SEWING MACHINE.—H. W. Fuller, Brooklyn, N. Y.

I claim the combination of the attachment described with the cloth plate, needle, rotating hook, bobbing slide, and other operative parts of a Wheeler and Wilson sewing machine, constructed and operating together, substantially as and for the purpose set forth.

58,246.—ROOFING FOR BUILDING.—William Gilbert, Detroit, Mich.

First, I claim the employment of a layer or net work of swamp grass, hemp, straw, or any other tough, fibrous material placed between the layers of the material employed for the roofing, substantially as described.

Second, For holding together the materials of which prepared roofing is made, I claim a cement composed of distilled coal tar and common slacked lime, as herein specified.

58,247.—ATTACHING HUB TO AXLES.—Chauncy H. Guard, New York City. Antedated Sept. 17, 1866.

I claim the attachment of a hub to an axle by means of a convexed journal formed substantially as herein described, and combined with bearing plates secured to the inner end of the hub, and embracing said disk, substantially in the manner and for the purpose herein set forth.

58,248.—FUEL DUMPER.—Joel Haines, West Middleburg, Ohio.

I claim the combination with the sloping sided truck and the derrick of the suspended fuel box having discharge boards closed by contact with the sides of the truck, and fastened and opened substantially as described.

58,249.—MEDICAL COMPOUND.—James M. F. Hall, Davenport, Iowa.

I claim the composition or compound as above prepared and described, and to be used as a medicine as herein set forth.

58,250.—FAN.—Nathan Harper, Newark, N. J.

I claim a fan constructed of wood as described and re-enforced by paper or cloth, substantially as and for the purpose specified.

58,251.—STOVEPIPE DAMPER.—B. J. Harris, Harrisburg, Pa.

I claim the swelled joint composed of the sections, A' A', when the lower section is provided with perforations or holes, and the upper section with an opening or door, substantially in the manner and for the purpose herein specified.

58,252.—GRATE BAR.—Samuel Harrison, Philadelphia, Pa.

I claim a grate bar consisting of a deep and shallow rib or ribs, combined in one casting, substantially as and for the purpose set forth.

58,253.—MATCH SAFE.—Thomas S. Hathaway, Decatur, Ill.

I claim the vertical slide, B, with its shoulder or recess, a, in combination with the receiving chamber, A, and friction spring, b, constructed and operating substantially as and for the purpose described.

58,254.—GRAIN DRYER.—Robert Heneage, Buffalo, N. Y.

First, I claim the heating cone, I, in combination with the induction chamber, H, and spout or hopper, G, said cone being supplied with hot air or its equivalent, substantially in the manner and for the purpose set forth.

Second, The pulverizing and distributing disk, L, constructed and operating substantially as described.

Third, The desiccating disks, F, provided with the inclined annular flanges, d d, and air passages and shields, i j, in combination with the curtains, c c, or their equivalent, substantially as shown and described.

Fourth, The combination and arrangement of the desiccating disks, F F, constructed as above described, with the diaphragms, C C, the whole operating substantially in the manner and for the purpose specified.

Fifth, The induction hot blast tube, K, and exhaust tube, O, in combination with the series of sections or divisions of the cylinder, each provided with a desiccating device, and said tubes having distinct connection with each division, substantially as set forth.

58,255.—RESPIRATOR.—Theodore A. Hoffmann, Beardstown, Ill.

I claim the gauze, B, inclosed cotton, C, covering, F, and elastic strand, E, combined and provided with the elastic strap, D, and operating substantially as described for the purpose specified.

58,256.—MACHINE FOR STRETCHING SILK, ETC.—Goodrich Holland, Willimantic, Ct.

I claim the arrangement of two stretching drums, B C, the bobbins, E E, or their equivalents for delivering the unstretched silk to the first stretching drum, and the take-up apparatus, for taking up the stretched silk, substantially as herein set forth.

58,257.—DENTIST'S TOOTH PLUGGER.—Chauncey M. Hooker, Hartford, Ct. Antedated May 1, 1866.

I claim the arrangement of the spiral spring, G, or its equivalent, to give the reciprocating movement as described, in combination with the tube, A, head, B, rubber stop, b, stem, D, collars, F and H, in the manner substantially as described.

58,258.—RADIATOR.—Henry Howard, Springfield, Mass.

I claim a steam radiator consisting of one or more steam chests or sections, each having the form of an extended endless pipe or flue, so arranged as that the steam shall enter and leave the same at one extremity thereof, through apertures pierced thereon opposite to each other, all substantially in the manner and for the purpose herein set forth.

I claim also breaking the exterior surface of said extended endless steam chest or flues into parallel ribs or flanges obliquely disposed at opposite inclinations, substantially in the manner and for the purpose herein set forth.

I claim also the use of diaphragms placed centrally between the induction and eduction apertures pierced at opposite points in a radiating steam chest or flue as hereinbefore described, substantially in the manner and for the purpose herein set forth.

58,259.—HAY ELEVATOR.—J. L. Hubbell and E. Sherman, Fairfield, Ct.

First, We claim the combination of the pawl, I, the latch, G, and the catch, H, with the truck, B, constructed and arranged to operate substantially in the manner and for the purpose specified.

58,260.—PETROLEUM COOKING AND HEATING APPARATUS.—John S. Hull, Cincinnati, Ohio.

I claim the open inverted conical tube, D, around the burner, C, in combination therewith and with the tubes, E E, arranged and operating substantially as and for the purpose herein specified.

I also claim the suceession of open tubes, E E, formed, arranged, and operating substantially as and for the purpose herein set forth.

I also claim the combination of a burner provided with open tubes, D E F, as described, with a cooking or heating apparatus or utensil.

58,261.—BURNER FOR VAPOR LAMPS.—John S. Hull, Cincinnati, Ohio.

I claim the forming of the cap, C, internally with an annular recess with channels and grooves, in the manner substantially as herein shown and described, in order to spread the burning material or cause a large volume of the same to be exposed to the flame for the purpose specified.

I further claim the fluted or corrugated plug, e, in combination with annular, serpentine, or circuitous passages in the cap, C, substantially as and for the purpose set forth.

58,262.—MEASURING SCALE FOR COFFINS.—James W. Hyde, Lewistown, Ill.

I claim a scale or rule for the purposes specified, the same consisting of the form, A, having legs, B F, of different lengths tapered and graduated substantially as described, and the cross bar, E, with graduated arms, G G, as and for the purpose specified.

58,263.—MANGER.—Jonathan Johnson, Kent, Ind.

First, I claim the combination with the manger, A, of the coarse screen, B, substantially as described and for the purpose set forth.

Second, The combination of the screen bottom drawer, E, with the drawer frame, D, and manager, A, substantially as described and for the purpose set forth.

Third, The combination of the screen drawer, E', constructed as described with the drawer frame, D, and manger, A, substantially as and for the purpose set forth.

58,264.—STEAM BLOWER.—J. H. Johnson, Paducah, Ky. Antedated Sept. 10, 1866.

I claim the exhaust pipe, C, the receiving chamber, B, and the conical tubes, c, when combined and operated as herein described and set forth.

58,265.—LAMP-CHIMNEY CLEANER.—Levi Keiler, Catawissa, Pa.

I claim the adjustable cleaner of any material constructed and combined with a hollow stem or handle to be inflated and operated as herein described and for the purposes set forth.

58,266.—BRIDGE.—Zenas King, Cleveland, Ohio.

I claim the chord, B, with the rod, B', so that the point of connection, d', of said chord and rod, the chord shall enter the plate, D', at an angle in combination with the counter and main braces, thereby rendering the structure less liable to fracture, the whole being constructed as and for the purpose as herein described.

58,267.—SHEARING APPARATUS.—Isaac Lampbugh, Springfield, Ill.

The improved portable shearing machine constructed as herein described and shown, as a new article of manufacture.

58,268.—GATE FASTENING.—Richmond A. Leeds, Stamford, Ct.

A latch for gate, etc., consisting of the two sector-shaped plates, D, hung eccentrically within a common casing or its equivalent, in combination with the fixed catch, H, substantially as herein described.

58,269.—MANUFACTURE OF KNIFE AND FORK.—J. B. H. Leonard, Meriden, Ct.

The mode or process described, of forming around and upon the tang of a knife or fork a hollow soft metal handle, substantially as described.

58,270.—CARD HOLDER.—A. A. Marks, New York City.

The combination of the holding disk, C, with the spring, F, to actuate the same, as and for the purpose set forth.

58,271.—LEVEL.—Daniel Masten, Bingham, N. Y.

I claim the combination of the ring, A, with its internal flanges, A', piece, B, and wheel, C, or their equivalent, substantially in the manner and for the purpose set forth.

58,272.—PACKING VESSEL FOR PETROLEUM.—J. W. Masury, Brooklyn, N. Y.

First, I claim so constructing a casing that when the can is inclosed therein the handle of the can will serve for both.

Second, The top, I, with its openings, X X, to receive the lugs E E, of the can, constructed and arranged in the manner and for the purpose herein specified.

58,273.—BORING ATTACHMENT TO LATHES.—C. E. McBeth, Hamilton, Ohio.

I claim an improved boring attachment to turning lathes formed by combining a thimble, E E, bush, G, and cap or ring, F, these parts being constructed and arranged as herein described with each other, with the hollow spindle B, and with the mandrel, H, substantially as described and for the purpose set forth.

58,274.—GRAIN DRILL.—John McDonald, Hardin Ill.

I claim the independently hinged cutters, A, levers, G, weights, H, and tubes, J, in combination with the slide, P, lever, M, and pins, N, when constructed and arranged substantially as and for the purpose set forth.

58,275.—STEAM GENERATOR.—John McMurtry, Lexington, Ky.

First, I claim the combination of the supply pipe, C, with the evaporating pans, D D, and E E, the latter having corrugated bottoms, the whole constructed and operating as herein set forth.

Second, The combination of the hinged cups, J J, the arms, n, the axle, K, the stuffing box, P, and the pulley, L, the whole constructed and operating substantially as herein specified.

58,276.—BEEHIVE.—George W. Merchant, La Forte, Ind.

First, I claim the combination of the hive, A, and frame, B, with the honey box, C, in such a manner as to admit of the removal of spare honey in box, C, without disturbing the bees in the breeding hive, and also of the examination of the brood combs without disturbing the bees in the honey box, C, substantially as represented and described.

Second, The spare honey box, C, arranged over the bee entrance or passage, E, substantially as and for the purpose set forth.

58,277.—CORN PLANTER.—S. P. Metz and Martin Rohrer, McDonaldsville, Ohio.

We claim the upright, B, frame, C, and support, E, with roller, D, in combination with the plow beam, A, the whole being constructed and arranged as set forth.

58,278.—PADLOCK.—E. M. and J. E. Mix, Westfield, N. Y. Antedated Sept. 15, 1866.

First, We claim securing the seal plate, G, in position over the seal recess by means of the pin, l, on the tumbler, C, so that when locked it cannot be released without moving the tumbler, substantially as set forth.

Second, In combination with the hinged escutcheon, K, we claim the spring, l, pin, m, and beveled ear pieces, o o, whereby the spring is made to constitute a self-closing hinge for the escutcheon, arranged and operating substantially as shown and described.

Third, We also claim the arrangement of the seal plate, G, in relation to the face, A, of the lock, and the escutcheon, K, whereby the plate moves on a plane between the two, in the manner and for the purpose set forth.

Fourth, We further claim the combination and arrangement of the vertically rising escutcheon K, with the recess, f, and swinging seal plate, G, whereby the former is made to conceal and protect the latter, substantially as shown.

58,279.—HANDLE FOR STOVES.—J. H. Mueller, Detroit, Mich.

I claim as my improvement in stoves, a handle made of wood or other bad conductor of heat and secured to one end of a radiating coil, the other end being connected to the door of a stove, all substantially as herein shown and described.

58,280.—HAY RACK FOR WAGONS.—Andrew Naramor, Utica, Mich.

I claim the adjustable stakes, B C, and ladder, e, in combination with the rack, a, box, A, and the pulley or windlass at each end, arranged and operating as and for the purpose substantially as set forth.

58,281.—CAP FOR BOTTLES.—M. V. Olry, Philadelphia, Pa.

I claim the within-described neck cap for bottles, the same consisting of the two tubes, A and b, connected together at the top and constructed for attachment to the neck of a bottle, substantially in the manner described.

58,282.—MACHINE FOR RAKING AND LOADING HAY.—H. S. Palmer, Norwell, Mich.

I claim the endless, flexible apron or elevator provided with reciprocating teeth, as above described, in combination with a rake for gathering and depositing hay upon the load, for the purposes and substantially as set forth.

58,283.—FRAME FOR MOSQUITO CANOPIES.—Isaac E. Palmer, Hackensack, N. J.

I claim the combination of the screw cap, B, skeleton center piece, A, and radial arms, C, substantially as herein described, whereby the said arms may be folded either in an upward or downward direction.

58,284.—ROLLER AND SEED PLANTER COMBINED.—Ezra Perin, Connersville, Ind.

First, I claim the combination on one frame of a seed planter, rollers, B, and furrowing plows, C, when arranged substantially as set forth.

Second, I claim the combination of the wheel, I, rod, H, bill crank, G, and slide, F, with the seed box, E, the parts being constructed and arranged substantially as set forth.

58,285.—DEVICE FOR MOVING CARS ON THE TRACK.—I. W. Pettengill, Rockford, Ill.

I claim the lever, D, with arm or handle, E, attached, and a rod, F, with clamp, G, secured to it, in connection with a grapple, A, constructed and arranged as shown and described, or in any equivalent way, so that it will grasp the rail and slip or slide thereon in one direction under one movement of the arm or handle, E, and remain fixed or stationary on the rail under the opposite movement of the arm or handle, substantially as and for the purpose set forth.

58,286.—ANIMAL TRAP.—David N. Phelps, San Leandro, Cal.

I claim a trap constructed of wire or iron, A, with main spring, B, semicircle, C, parallel straight arm, D, with bent head, E E, said arm crossing the semicircle and forming the hold when sprung, when set held in place by the bent arm, H, and sprung by bait, H', substantially as described and for the purposes set forth.

58,287.—WATCH-CHAIN HOOK.—Morris Pollak, New York City.

I claim the hook for watch chains and other articles, formed double with the points standing in opposite directions and attached to each other by a pin or rivet that allows said hooks to separate sidewise, in the manner and for the purposes set forth.

58,288.—CHURN.—Isaac T. Price, Leesville, Ohio.

I claim the springs, G, in combination with a cream vessel, substantially as and for the purposes set forth.

Also the base board, E E', constructed and operating substantially as and for the purposes set forth.

58,289.—POTATO DIGGER.—W. F. Quinby and George G. Lobdell, Wilmington, Del. Antedated Sept. 10, 1866.

First, We claim the use in rotary diggers of teeth bent to the curve described, for the purpose specified.

Second, The curved tooth, a, having the sectional form described, for the purpose set forth.

Third, The tooth, a, adapted to a groove in the cross bar, B, and secured thereto by a plate, D, as and for the purpose herein specified.

58,290.—SHEEP HOLDER.—D. R. Reed, Orangeville, N. Y.

I claim the removable or detachable head rest, F in combina-

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tion with the fixed bed piece, H, and the wheels, D D', provided with clamps, E, and fitted on the screw shafts, C C', all arranged substantially as and for the purpose set forth.

58,291. — Sadiron Handle. — Frederick Rehorn, New York City.

First, I claim the handle, B, consisting of the top cross bar, d, standard, b, and bottom cross bar, c, cast in one piece, and applied in the manner and for the purpose specified.

Second, The groove wooden handle, C, in combination with the top cross bar of the metal handle, B, and with pins or other suitable fastenings, substantially as and for the purpose set forth.

58,292. — Body Top for Carriages.—Uel Reynolds, New York City.

I claim the clip body loop, constructed as and for the purposes specified.

58,293.—Lady's Saddle Tree.—William Rhodes and Greenville Hazlewood, Bloomfield, Iowa.

We claim a lady's saddle tree which is so constructed that while its bellying portions, B B, accurately conform to the horse's back without being stuffed or padded, the upper surfaces of said portions are elevated above the side bars, A A, all along the length of said bars so as to form the requisite raised seat without being padded or stuffed on said surfaces—but this we only claim when the elevated bellying portion and the bars of each side of the tree are of one piece and the two side bars are united by straps, all substantially as set forth.

58,294.—Steam Safety Valve—George W. Richardson, Troy, N. Y.

I claim a safety valve with the circular or annular flange or lip, c c, constructed in the manner or substantially in the manner shown, so as to operate as and for the purpose herein described.

58,295.—Corn Planter.—Josiah S. Rickel, Geneseo, Ill.

I claim the lever frame, H, with seed slide, G, attached, in connection with the corn box or hopper, F, arranged and applied to the corn cover or jumper, substantially in the manner as and for the purpose herein set forth.

58,296.—Candle Stick.—Alfred Rix, San Francisco, Cal.

First, I claim the use of the jaws, B B, one or both movable, or their equivalents, arranged with a space, z, on each side of the candle by which the candle can be adjusted vertically by the thumb and finger.

Second, The trapezoid, a b c d, by which to operate the jaws, all constructed substantially in the manner and for the purposes set forth.

58,297.—Saw.—E. I. Robinson, Canton, Ohio.

I claim a saw constructed with elongated teeth, in the manner described for the purpose set forth.

58,298.—Car Wheel.—E. S. Robinson, New York City.

I claim the plate, a a, and cross piece, c, and hub, b, cast in one piece, forming the open space, as shown, in combination with the tire, B, secured by webs, D, substantially as described, for the purpose specified.

58,299.—Boring and Pumping Apparatus for Oil Wells.—John B. Root, New York City. Antedated Sept. 10, 1866.

I claim the combination of the horizontally-movable direct-action steam engine, the horizontal platform and guides on the derrick, and the boring bar or drill rod and pump, substantially as and for the purpose herein specified.

58,300.—Fence.—Sherman H. Rose, Wheeler, N. Y.

I claim the pins, a b, passing transversely through the posts, A, in combination with the slots, f, arranged in the ends of the removable panels, B, substantially as herein set forth for the purpose specified.

58,301.—Mechanical Medicator.—P. A. Royce, Buffalo, N. Y.

First, I claim the apparatus consisting of the pumping cylinder, B, chambers, F K, provided with induction and eduction valves and orifices with the supplementary or generating chamber, T, connected with chamber, F, by the passage, Y, the whole combined, arranged, and operating substantially in the manner and for the purpose herein set forth.

Second, I also claim, in combination with the above-described apparatus, the perforated air pipe, G, and sliding cap, W, operating in the manner and for the purpose specified.

Third, I also claim, in combination with the said apparatus, the ozone generator, Fig. 14, constructed and operating substantially as described.

58,302.—Manufacture of Soap.—John T. Ryan, Brooklyn, N. Y.

I claim the combination of solutions or mucilages obtained from Algaceæ, Linaceæ Acacia, or such other vegetables or vegetable substances as do not turn blue when tested with iodine, with soaps or saponaceous compounds, substantially in the manner and for the purpose herein set forth.

58,303.—Silicated Liquid for Manufacture of Soap and other Purposes. — John Taylor Ryan, Brooklyn, N. Y.

First, I claim the combination of any vegetable, gummy, or mucilaginous substances or solution, with any one or more of the silicates of potassa, soda (neutral or alkaline), ammonia, alumina, or magnesia, substantially in the manner and for the purpose herein set forth.

Second, I also claim the combination of animal gluten with vegetable mucilages or gums, and with the silicates of potassa, soda, ammonia, alumina, or magnesia, substantially in the manner and for the purpose herein set forth.

58,304.—Mechanical Movement.—Cyrus W. Saladee and Wm. Veach, Newark, Ohio.

First, We claim broadly supporting and operating the pitman, C K (Figs. 1 and 2, Plate 1), across and upon a line with the center, E, of the corrugated driving wheel, A, substantially as and for the purpose set forth.

Second, We claim the arrangement of the corrugated wheel, A, in combination with the pitman, C K, and friction rollers, B B', or their equivalent, in the manner and for the purpose substantially as shown and described.

58,305.—Pea Sheller.—George T. Savery, Groveland, Mass.

I claim combining a roller of a machine, as described, by the employment of a ring of vulcanized rubber, or other elastic or suitable material under such an arrangement that while motion is communicated from one roll to the other by friction of contact there shall also be a sufficient space between the two rolls to effect the shelling of the peas, as herein described and set forth,

58,306.—Adjustable Wrench.—Alonzo Sedgwick, Poughkeepsie, N. Y.

I claim the slotted shank having a groove, T, in combination with the jaws, B B, constructed and arranged as described.

58,307. — Rotary Valve. — Daniel Sexton, San Gabriel, Cal.

I claim the arrangement of the ports, c c', port, d, valve, B, having partition, E', stem, C, lever, D, temper screw, G, ports, e e', ports, f f', and cylinder, A, constructed and operating substantially as and for the purpose represented and described.

58,308.—Fence.—J. W. Shankland, Summerfield, Ohio.

I claim the arrangement of the post, A, iron blocks, E E, and foundation stone, D, as described.

The mode of securing the arms and post in position by the combination of blocks, H, the keys, I, arms, G, and the blocks, F, on the post, A, substantially as described.

58,309.—Water Wheel.—Simeon Sherman, Weston, Mo.

First, I claim the upright ledge, a, a' the inner edge of the bottom of the scroll, D, in combination with a wheel, A, fitted within the scroll and exceeding the former in depth, substantially as and for the purpose set forth.

Second, The buckets, C C', placed alternately on the exterior of the wheel, and constructed and arranged in the manner substantially as shown and described.

Third, The attaching to or casting the buckets, C C', with a shell, D, fitted on the body of the wheel and arranged with set screws, E, by which the buckets may be adjusted higher or lower on the wheel, substantially as and for the purpose specified.

Fourth, The register, G, constructed and applied as shown and described, to regulate the flow of water through the draft tube, F, and prevent the upward reflux of water therein.

58,310. — Button. — Albert M. Smith, Brooklyn, N. Y. Antedated Sept. 17, 1866.

I claim a button having a compound shank composed of a central pin and a spiral fastening revolving around said pin, all substantially as described.

58,311.—Measuring Stopple for Canisters.—W. Morris Smith, Washington, D. C.

First, I claim so constructing an oscillating or rotating measuring device for canisters that their contents shall not be exposed to the external air during the act of measuring and discharging the measured quantity, substantially as herein set forth.

Second, An oscillating measuring chamber, C, or its equivalent, adapted to serve as a cut-off or stopple for a canister, and also as a means for measuring the contents of the same, substantially as described.

58,312.—Pepper Caster.—Louis Soehlmann, Jersey City, N. J.

I claim the finger bar, D, the fan, E, and the series of wipers, G, when in combination with a pepper caster, A, substantially as and for the purposes described.

58,313.—Attachment for the Legs of Billiard Tables.—William B. Soumeillian, Philadelphia, Pa.

I claim the combination of the vulcanized india-rubber or other equivalent substance for a step, with a metallic base, hollow screw pillar, plate nut, and friction disk, substantially as and for the purposes herein set forth.

I claim, in combination with the device above described, the double-armed nib wrench or hand lever, for operating the same, in the manner and for the purposes specified.

58,314.—Needle Threader.—Charles L. Spencer, Providence, R. I.

I claim a needle threader, the threading channel of which is divisible, all substantially as described.

58,315.—Machine for Cutting Leather.—Cabel S. Stearns, Marlboro, Mass.

I claim hanging the cutting-out die to a movable frame, so that it can be brought over any portion of the table, L, in combination with the presser block, M, or equivalent device for pressing it down, substantially as set forth.

I also claim the hollow shaft, H, with its swiveling collar, I, in combination with the die, K, and the rod, g, substantially as described.

58,316.—Siphon.—E. I. Stearns, Honesdale, Pa.

I claim a siphon, having its discharge end or nozzle enlarged, and provided with a sponge or other suitable filtering medium, substantially as described and for the purpose specified.

58,317.—Means for Raising Water by Steam. —John W. Stiles, New York City.

First, I claim the arrangement of the nozzle or ends of the steam and water pipes, substantially as and for the purpose specified.

Second, Arranging within the water or eduction pipe a valve, or its equivalent, H, for the purpose of enabling me to cause a back pressure in such pipe, A, and the space which surrounds the lower end or nozzle, B, thereof, by which any obstructions may be removed, substantially as described.

Third, The arm or brace, E, or its equivalent, substantially as and for the object specified.

58,318.—Plow.—R. B. Summers and S. Dement, San Jose, Ill.

First, We claim the manner of attaching the beam, B, to lever and crank, G, and raising or lowering the plow, D, by the lever and crank, G, and ratchet, F, as set forth.

Second, We claim the rod, g, and spring, h, as described, and for the purposes set forth.

58,319.—Rotary Cultivator.—Andrew Thompson, Ottumwa, Iowa.

First, I claim the pendent rods, J J, provided with bearings for the cylinder, G, said bearings being guided in slots in the frame, E, for the purposes and substantially as herein shown and described.

Second, I claim the revolving cylinder in combination with the pendent rods, J J, and crowned braces, H H, substantially as and for the purpose herein shown.

Third, I claim the frame, E, provided with the slots which guide the bearings of the pendent rods, J J, and braces, H H, substantially as herein shown.

58,320.—Corn Harvester.—Daniel J. Tittle, Albany, N. Y.

I claim, First, The revolving cutters herein described, arranged in respect to and operated independent of each other, as set forth, in combination with a machine for harvesting cane or corn stalks.

Second, The screw shafts, F, in combination with the cutting apparatus of a corn or cane harvester, for the purpose of adjusting the hight of the said cutting apparatus from the ground.

Third, In combination with the revolving cutters, G, the adjustable platform, P, substantially as and for the purpose set forth.

Fourth, The slotted bars, M, in combination with the reel, N, and cutters, G and H, arranged as described, of a cane or corn harvesting machine, for the purpose of adjusting the hight of said reel.

Fifth, In combination with the side bars, A A, the platform, B, provided with the vertical flange as shown, for the purpose of stiffening said platform and frame.

Sixth, Connecting the draft frames, a, of a corn and cane harvesting machine, as herein described, to the outer ends of the main axles, so that each of said axles shall be supported at a point outside of the bearing wheel, substantially as and for the purpose specified.

Seventh, In combination with the main frame and cutting apparatus of a harvester for cane and corn stalks, the curved brace plate, Y, to strengthen and support the lower end of the frame which contains the cutting apparatus.

Eighth, In combination with the main frame, A, of a harvester for cane or corn stalks, as herein described, the vertical frame, D, substantially as and for the purpose set forth.

58,321. — Apparatus for Supplying Gas on Steamboats and other Vessels.—N. Treadwell, New York City.

I claim the stop cocks or valves, a b c d, in combination with the gas supply pipe, D, pump, J, discharge pipe, G, pipe, C, and gas holder, A, all constructed and operating substantially as and for the purpose described.

58,322.—Sash Supporter.—William S. Van Hoesen, Saugerties, N. Y.

I claim the loose bolt or pin, C, arranged relatively with the inclined recess, B, in the manner described, and employed in combination with a ball or roller, A, for the purpose of locking and sustaining a window sash, as herein explained.

58,323.—Plow.—William Veber, Jr., Shingle Creek, N. Y.

I claim the rod, F, attached to a plow, when constructed and operated as herein shown, substantially and for the purpose as described.

58,324.—Sadiron Heater.—William P. Wage, Bane Center, N. Y.

I claim the stove, A, constructed as described, with an air chamber, provided with a metallic case, B, lamp, C, and pipe, E substantially as and for the purpose herein set forth.

58,325.—Flour Packer.—Gustavus A. Warner, Portland, Oregon.

I claim the arrangement of the stop, a2, spring sliding gate, S, spring frame, v, pulley, d, and weight, D, in combination with the carriage, C, constructed and operating in the manner and for the purpose herein described.

58,326.—Pruning Instrument.—G. F. Waters, Waterville, Me.

First, I claim the combination of the eccentric cutter, D, with the hook, B, when the parts are constructed and arranged to operate in the manner and for the purposes herein specified.

Second, The lever, E, in combination with the cutter, D, substantially as and for the purposes herein specified.

58,327.—Envelope Machine.—Thomas V. Waymoth, New York City.

First, Gumming the seal flaps of the blanks for envelopes, simultaneously or nearly so with the lower or end flaps, or during the time while the blank passes from the gumming to the folding mechanism, and by mechanism substantially such as herein described, or any other suitable mechanism which will produce the same effect.

Second, The arrangement of a curved guide, T, in combination with the table, A*, constructed and operating substantially as and for the purpose described.

Third, Causing the seal flap when folded to bear on one or more of the folding wings, or on parts or projections of said wings, substantially as and for the purpose described.

Fourth, The projecting lips, f*, in combination with the joints of the folding wings, constructed and operating substantially as and for the purpose specified.

Fifth, The raised surface at or near the edge of the wing which folds the lower flap, substantially as and for the purpose described.

Sixth, The endless apron, Q, with radiating plates, or arms, j', in combination with a suitable gumming and folding mechanism, constructed and operating substantially as and for the purpose set forth.

Seventh, Passing the endless apron, Q, at its receiving end over a square or polygonal shaft, l', substantially as and for the purpose described.

Eighth, The curved rail, o', or its equivalent, in combination with the apron, Q, constructed and operating substantially as and for the purpose set forth.

Ninth, The receiving box, R, and follower, S, in combination with the discharging end of the endless apron, Q, constructed and operating substantially as and for the purpose described.

Tenth, The lever arm, O, in combination with the carrying platform, N, and with a suitable die inserted or secured to said lever arm or to the platform, or to both, substantially as and for the purpose set forth.

Eleventh, The arrangement of dies, s, on the creasing plunger and on the folding table, or on either, substantially as and for the purpose described.

Twelfth, The tapes, u, arranged in an arm, v, and operating in combination with folding table, P, and plunger, I, substantially as and for the purpose set forth.

58,328.—Hat.—William H. White, Kent Island, Md.

First, In combination with an open draw casing or other open casing, placed at the outer edge of the brim of the hat, as described, I claim the hoop or form of metal, or other suitable material, for forming and holding in shape said brim, constructed and arranged for operation, substantially as herein shown and set forth.

Second, As a new article of manufacture, I claim the hat or cap, constructed as herein described and set forth.

58,329.—Hat.—William H. White, Kent Island, Md.

First, As a frame for shaping hats and caps made of soft or limber material, I claim the combination of the crown and rim hoops, with a distending spring, which at the same shall admit of being compressed, so that the two hoops may be brought into juxtaposition, as and for the purposes set forth.

Second, I claim the combination of the distending spring, as above set forth, with the adjustable crown and rim hoops, so arranged that the frame may be adjusted to hats of different dimensions, as herein shown and described.

Third, In combination with the hat or cap lining, provided at its upper end with draw casing and strings, as described, I claim the hoop or form for shaping the top of the lining, as herein shown and set forth.

58,330.—Shaft Coupling.—J. L. Winslow, Portland, Me.

I claim the combination of the flanges beveled and slotted, as described, the collars fitting thereupon, the bolt and metallic hoop, all constructed, secured, and operating to form a coupling for shafts, as herein set forth.

58,331.—Evaporator.—J. E. Youngman, Rockford, Ill.

I claim, First, The pans, S U Z, when arranged in relation to each other as described, in combination with the perforated strainers and skimmers connected with said pans, substantially as and for the purpose set forth.

Second, The skimmers, V, and strainers, W X, in combination with the pans, U, when arranged and operating substantially as and for the purpose set forth.

Third, The dampers, arranged as described, in combination with the fire-box, A, and grate bars, Fig. 5, as and for the purposes set forth.

Fourth, The chamber, I'', in combination with the pans, S, double flues, arranged in the manner and for the purpose set forth.

Fifth, The flue, L, with double sides and bottom, in combination with the dampers, D' M, and pans, as and for the purpose set forth.

Sixth, The vents, d', and pans, S, in combination with the conductor, e, strainer, V, and pan, U, as and for the purpose set forth.

58,332.—Button.—Arthur W. Browne, Brooklyn, N. Y., assignor to himself, Joseph L. Moss, New York City, and Edward W. Moss, Brooklyn, N. Y.

I claim the combination of the button, A, having shouldered opening, a, flanged stud, b, having conical depression in its bottom, and slotted plate, c, substantially as described for the purpose specified.

Second, The stud or pin, d, for the purpose of detaching the button from the dress, and its combination with the wire spring fastening, B, constructed substantially as herein shown and described.

58,333.—Fan Attachment for Sewing Machines. —Samuel Burr (assignor to himself and David Coulan), New York City.

I claim the employment of the vibratory fan, L, when arranged with the supporting standards, I I, and driving arms, k h, and the treadles of the machine, all as herein before specified.

58,334.—Potato Digger.—W. H. Burridge, Cleveland, Ohio, assignor to Henry Carter, Aylmer, Canada.

First, I claim the rake, I, wheel, B, provided with flanges and cutters, belt, K, fork, b, in combination with adjustable table, G, and guide, G', for the purposes and in the manner set forth.

Second, The share, F, saw-toothed cutters, scraper, M, section, N, and adjustable guide, G', when arranged to operate in the manner and for the purpose described.

Third, The wheel, B, spuds, c, scraper, M, share, F, adjustable table, G, and guide, G', when arranged in the manner and for the purposes set forth.

58,335.—Amalgamator.—S. Freder ck Charles (assignor to himself and S. E. Russeli), Dahlonega, Ga.

First, I claim the so combining a panning machine, a regrinding machine and an amalgator, that the gold shall be thoroughly extracted by the continuous and connected action of all of them, substantially as set forth.

Second, The adjustable partition, B, constructed and operate substantially as and for the purposes set forth.

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Third, The deep radiating channels, j, in the lower surface of the grinder, K.

Fourth, The combination of an upper revolving grinder with an oscillating lower one, constructed and operating substantially as specified.

Fifth, The case or shell, M, of the grinders in combination with the rollers, i, and the reciprocating arm or lever, O.

Sixth, The amalgamator, R, constructed so as to form one large and one narrow compartment, by the insertion of the removable and adjustable partition, o, substantially as specified.

Seventh, The revolving frame provided with amalgamating pans suspended below the surface of the auriferous mass, constructed and operating substantially as and for the purposes specified.

Eighth, The location of the flue below the series of amalgamators, substantially as and for the purposes specified.

58,336.—LADY'S SKIRT.—Dwight M. Church (assignor to himself and George R. Bailey), Derby, Conn.

I claim an improved lady's skirt, formed by combining a detachable lower part, c, with the body or main part, A, of the skirt, by astenings concealed by a tuck, substantially as described and for he purpose set forth.

58,337.—CHURN.—Horace Cliff, Mystic River, Conn., assignor to E. Burrows Brown, Groton, Conn.

I claim the construction of the dasher of radial arms, a a, having independent blades, c, arranged at right angles to them, substantially as described.

I also claim the combination of the button-head pin, h, and turn button, i, with the tenon collar, d, shaft, E, and key pin, e, in the manner and for the purpose described.

I also claim the arrangement of the rotary dasher, constructed as herein described, in combination with the air ducts, J J, and exit air pipe, N, arranged as described, all for the purpose set forth.

58,338.—THRASHING MACHINE.—A. B. Crawford (assignor to himself, John O'Ferrall and Thomas L. Daniels), Piqua, Ohio.

First, I claim the angular dividing board, L, applied and operating substantially as described and represented.

Second, The arresting pins, K, on the movable frame, M, as described.

Third, The link, Fig. 2, with its corresponding pintle and socket, the socket for the reception of the journal of the round and lug, limiting its rotation by the impingement of its projection, e, as described.

Fourth, The forked rod for shaking the shoe, as described and represented.

58,339.—LUBRICATING APPARATUS.—John C. Eggleston (assignor to himself, E. M. Hitchcock and G. W. Beach), Waterbury, Conn.

First, I claim the brush, D, and toothed wheel, A, combined and operating substantially as described for the purpose specified.

Second, I also claim the pintle, a, in combination with the wheel, A, brush, D, and oil chamber, B, all substantially as and for the purposes set forth.

58,340.—HOISTING APPARATUS.—Dennis Frisbie (assignor to himself and Samuel C. Goodsell), New Haven, Conn.

I claim the traversing frame, C, when supported by the truck wheels, D, running on the horizontal arm, B, of a crane, and moved by the pulley, E, through the spur wheels, G and H, and pinion, K, and rack, L, and bearing suspended the load, attached to the movable pulley, P, from pulleys, M and M', over which the chain, Q, passes, said several parts being arranged substantially as set forth.

58,341.—COTTON AND HAY PRESS.—Samuel C. Goodsell and Dennis Frisbie (assignors to themselves and D. P. Calhoun), New Haven, Conn.

First, In cotton, hay and other like presses we claim the combination with a movable platen operated by levers as described, of a differential drum or shaft for imparting motion to the levers at a speed increased proportionate to the resistance, as herein shown and set forth.

Second, In a cotton, hay, or other like press, we claim the combination of the following elements: 1st, a movable platen; 2d, levers to operate the platen; 3d, a differential drum to operate the levers.

Third, In combination with the pawls for actuating the ratchet wheel we claim the oscillating or rocking trips for disengaging the pawl from the wheel under the arrangement shown and described, so as to be operated by the eccentrics upon which the said pawls are mounted.

Fourth, In combination with a stationary or inwardly yielding end plate, as described, we claim a door or doors mounted eccentrically upon hinges in such manner that they may be moved laterally to become engaged with or disengaged from the said end plate, substantially as herein shown and described.

58,342.—LIFTING AND PRESSING SCREWS.—Richard H. Gray (assignor to himself and S. B. Abrams), Greenville, Alabama.

I claim the combination and arrangement of the cast-iron screw, B b, and cast hollow nut, D, provided with cup, G, with the two-part cast collar, H, provided with flanges, f and i, the whole being constructed and operating with friction balls, I, in the manner and for the purpose set forth.

58,343.—RECUMBENT CHAIR.—Daniel B. Hall (assignor to himself and M. G. Wiley and C. J. Cobb), Bucksport, Maine.

I claim the above described improved recumbent chair, consisting of the supporting frame, A, the movable back frame, B, the sacking, C, the leg rest, and the levers, arms and rollers, as explained, or their mechanical equivalents, constructed, arranged and applied substantially in manner and so as to operate together as herein before specified.

58,344.—INDIA-RUBBER NECKTIE.—William H. Halsey (assignor to David N. Ropes), Hoboken, N. J.

I claim the arrangement of the band of metal, or its equivalent, in a necktie formed of hard india-rubber or similar material, under the external strip or band, passing around the bow and necktie, for confining together and holding the several parts of the necktie, and preserving the external band from fracture, substantially as above described.

58,345.—SHAFT COUPLING.—Moses Hawkins (assignor to R. M. Bassett, T. S. Bassett, and Moses Hawkins), Derby, Conn.

I claim the use, in combination with the surrounding sleeve and the slotted shaft ends, of a key, E, so shaped and the whole so arranged as to lock the shafts' ends longitudinally together, and key them both in the sleeve, substantially as set forth.

I also claim forming the journals of the shafting of the coupling sleeves, C, substantially as hereinbefore described.

58,346.—FORGE FURNACE.—Bennet Hotchkiss, New Haven, Conn., and Henry Shattuck, Hamden, Conn, assignors to Bennet Hotchkiss.

We claim, First, Combining a forge, A, with a reverberatory furnace, C, in the manner substantially as described for the purpose specified.

Second, Applying a current of air, whether set in motion by an artificial blast or by the chimney draught, to cool the furnace doors and to furnish a draught to the fire, in the manner substantially as described.

Third, The use of an air blast to prevent the flames and gases from belching from the furnace when the door is opened, arranged and applied substantially as described.

Fourth, The combination of a cistern, K', arranged as described, with the furnace, A, for the purpose of converting into vapor a body of water by the waste heat of the furnace, and applying such vapor to stimulate combustion, substantially as set forth.

Fifth, Combining with the escape flue, J', a space, L, for the circulation of air, and connecting the same with the furnace for aiding the draft of the fire, substantially as described.

58,347.—CIPHERING MACHINE.—Samuel J. Kelso, Detroit, Mich., assignor to himself and James Edgar, New York City.

I claim, First, The face plate, A, with segmental slots, a a1 a2, and orifices, e e1 e2, in combination with the wheels, b b1 b2, and pointer, c, all constructed and operating in the manner herein shown and described.

Second, The jointed rods, h i, with noses, g, and teeth, k, in combination with the toothed wheels, b b1 b2, and pins, f, constructed and operating substantially as and for the purpose set forth.

Third, The disengaging slide, q, in combination with the carrying mechanism, constructed and operating substantially as and for the purpose described.

Fourth, The multiplying slide, D, with strips, u u, in combination with the adding mechanism, constructed and operating substantially as and for the purpose set forth.

58,348.—CORN HARVESTER.—George Manlove and J. P. Green (assignors to George Manlove), Chicago, Ill.

First, We claim the forked frame, K, in combination with the roller, R, yielding rollers, P Q, and cutters, S, substantially as described.

Second, And in combination with the above, we claim the endless belt, N, substantially as described.

Third, We claim the husking cylinder armed with teeth, as described, and bent rods, i i h h, in combination with the frame, K, cutter, S, and endless apron, f, all constructed and operating substantially in the manner and for the purpose set forth.

Fourth, And in combination with the above, we claim the partitioned box, V, substantially as described.

Fifth, We claim the frame, A, lever, L, standards, M N, forked frame, K, with its rollers, P Q R, cutters, S, and endless belt, f, in combination with the husking cylinder, p, rods, h h i i, and partitioned box, V, the whole being constructed and operated substantially in the manner and for the purpose set forth.

58,349.—CORN HARVESTER.—George Manlove and J. P. Green (assignors to George Manlove), Chicago, Ill.

We claim, First, The guard, H, in combination with the rods, M, pins, o o, for receiving the stalks, curved rods, I, and cutters, a, substantially as described.

Second, And in combination with the above we claim the endless apron, cutters, and reel, situated on the adjustable frame, L, the whole being constructed and operated substantially in the manner and for the purpose set forth.

Third, We claim the table, A', connected to the frame of the machine by a universal joint, and having rods, e e, attached to the said table, and rods, e' e', attached to the hinged piece, g, and cords or bands, f f, the whole being constructed and operated substantially in the manner and for the purpose set forth.

Fourth, We claim the guard, H, cutters, a, rods, M and I, and pins, o o, in combination with the endless conveyer, N, and table, A', constructed as described, the whole being operated substantially in the manner and for the purpose set forth.

58,350.—SNAP HOOK.—Alonzo McManus (assignor to North and Judd Manufacturing Company), New Britain, Conn.

I claim constructing the recess, a, and combining therewith the solid bridge, c, arranged transversely over the spring, B, in connection with the slot, b, substantially in the manner and for the purpose as herein described.

58,351.—ARTIFICIAL LIMB.—Joshua Monroe (assignor to himself and Jetna Gardiner), New York City.

First, The elastic side straps, a a, in combination with straps, d b, and with the limb, A, constructed and operating substantially as and for the purpose set forth.

Second, The arrangement of a tendon, C, made of rigid material, in combination with a knee joint of an artificial leg, constructed and operating as and for the purpose described.

Third, The button, o, and mortise, p, in combination with the ankle tendon, D, constructed and operating substantially as and for the purpose described.

Fourth, The toe plate, q, applied in combination with the toe joint, substantially as and for the purpose set forth.

58,352.—PAD HOOP.—George Ross and Michael White (assignors to themselves and Charles W. Daniels), Buffalo, N. Y.

We claim forming a pad hook for harness in two parts or jointed sections, a b, the one rigidly attached to the tree, and the other movable on its pivot axis, in combination with a spring, d, and bearing, e, or its equivalent, constructed and arranged substantially as herein set forth.

58,353.—SHIFTING CUTTER THILL.—H. L. Taylor (assignor to himself and Charles W. Daniels), Fredonia, N. Y.

I claim the combination of the rod, E, double-acting spring, I, or its equivalent, and eye-bolts, a b c and d e f, arranged and operating substantially in the manner and for the purpose herein set forth.

58,354.—LUBRICATING CUP FOR STEAM-ENGINE.—Maurice Vergnes (assignor to himself and Alphonse Perrine), New York City.

I claim, First, The arrangement of the movable oil vessel or reservoir, E, in combination with the cup, B, and oil passages, a and b, and their connections with such reservoir, E, the whole arranged and operating substantially as and for the purposes set forth.

Second, The arrangement of the openings, g g, in the fixed plate, c, in combination with the openings, 3 3, in the oil vessel, E, substantially as and for the purposes set forth.

58,355.—HORSE SHOE.—Cassius M. Werner (assignor to himself and Edwin A. Bigelow), Rockford, Ill.

I claim, First, The combination of the band, F, with the shoe, A, constructed, arranged, and operating substantially in the manner described for the purpose set forth.

Second, The combination of the ribs, J, with the band, F, arranged and operating substantially in the manner and for the purpose set forth.

58,356.—FAUCET.—Eugene Candler, London, Eng.

I claim the tap, as above described, having the body, p, plug, f, air inlet, e, valve, i, and valve seat, g, all arranged substantially as and for the purpose set forth.

58,357.—CARD CASE.—F. A. Lamontagne, Montreal, Canada.

I claim, First, The spring slide, o, provided with beveled teeth, so hung in the race, m, and combined with the spring, e, as to press and hold the card on its forward motion, and slide back over the cards without contact, substantially as described for the purpose specified.

Second, The spring, e, and pin, f, in the forward part of the box, A, guiding the card in its discharge, and preventing more than one card from being forced out at the same time, substantially as described, for the purpose specified.

Third, The elliptic springs, a a, slotted plate, b, having lugs, c, spring, e, and pin, f, slotted plate, i, and toothed spring slide, o, arranged in combination with the slotted lid, B, and case, A, provided with guide and holding laps, s, and grooves, d, operating substantially as described for the purpose specified.

58,358.—METHOD OF SCOURING WOOL.—Gustave Michelet, Brussels, Belgium.

I claim the combined process for extracting from the wool itself all the elements necessary for cleaning, scouring or removing the soil from the same, and of obtaining by the same operation liquids free from foreign matters which would decrease the value of the products derived from them, and sufficiently concentrated for forming these sub-products with advantage, substantially as above described.

58,359.—LIFTING CYLINDER OF WOOL-WASHING MACHINES.—John Petrie, Rochdale, England, and James Teal, Towerby, England.

We claim the grooved disk, g, right angular arms, i, and levers, k, in combination with the crank, f, shaft, c, prongs, m, and cylinder, a, constructed and operating substantially as and for the purpose described.

58,360.—PUMP.—Louis Drescher (assignor to Gustavus Meyer), Matanzas, Cuba.

We claim the cup-shaped pistons, B, with packing disks, f, in combination with spring disks, g, applied and operating substantially as and for the purpose set forth.

58,361.—LAMP.—Gustav Stobwasser, Berlin, Prussia, assignor to E. Douglas, Son & Company, New York City.

We claim the pin, i, attached to the lower cylindrical part, e, of the fountain, and having a cylinder, f, fitted loosely on e, and provided with a vertical rib, a*, having a notch, b*, made in it, and a horizontal slot, c*, in combination with the vertical groove or recess, b, and the horizontal groove, c, in the cylinder, G, which is secured in the socket, F, the cylindrical part, e, of the fountain, and the cylinder, f, having holes, g h, made in them, and all arranged to operate substantially in the manner as and for the purpose set forth.

REISSUES.

2,363.—MACHINE FOR KNEADING DOUGH.—George R. Baker, St. Louis, Mo. Patented Oct. 10, 1865.

First, I claim the combination of the dough-kneading chamber, B B', and the eccentrically rotating wheel, C, whether said wheel rotates on a fixed and rigid or a flexible and yielding axis of rotation, as and for the purposes described.

Second, I also claim the combination of the shaft, a, with its pivoted arm, a', the slot, e, and spring, f, arranged and operating substantially as and for the purpose described.

2,364.—WASHING COMPOUND.—Richard W. Chappell, Chicago, Ill. Patented Sept. 19, 1865.

I claim a washing compound composed of unslacked lime, sal soda, borax, salt of tartar, and ammonia, in the proportions, substantially as herein specified and described.

2,365.—MANUFACTURE OF PAPER.—R. L. Delisser, New York City, assignee of Aloyse Chevalier Auer de Welsbach, Vienna, Austria. Patented April 21, 1863. Antedated Nov. 23, 1861.

I claim my discovery or invention, and as a means of obtaining from the husks, leaves, and stalks of Indian corn fibers in a suitable condition to be spun into thread is the treatment of such material in a heated alkaline solution, substantially as described, to dissolve and separate the proximates of the plant from the fibrous, in combination with the after process of hatcheling, or the equivalent thereof, to get the fibrous in a suitable condition for spinning, substantially as described.

2,366.—MACHINE FOR GUMMING AND PRINTING ENVELOPES.—Henry C. Berlin and George H. Jones (assignees of Thomas V. Maymouth), New York City. Patented June 12, 1866.

First, We claim the operation of the hinged table, B, in combination with the gummer, D, substantially in the manner and for the purpose described.

Second, We claim the operation of the movable separator, G in combination with the gummer, D, substantially in the manner and for the purpose described.

Third, We claim imparting an intermittent motion to a suitable mechanism combined with the endless apron, H, and the reciprocating carrier, F, and gummer, D, operating in the manner and for the purpose described.

Fourth, We claim the operation of the finger, l', and rollers, K', in combination with the apron, H, and carrier, F, substantially in the manner and for the purpose described.

Fifth, We claim putting on the gum on the seal flap of an envelope blank by the picker or gummer so that the envelope is raised or held stationary while the balance of the pile is removed, substantially in the manner and for the purpose described.

DESIGNS.

2,428 and 2,429.—PICTURE FRAME.—John H. Bellamy (assignor to David A. Titcomb), Charlestown, Mass. Two patents.

2,430.—CENTER PIECE.—Henry Berger, New York City.

2,431.—CLOCK-CASE FRONT.—L. F. Carter and W. W. Carter, Bristol, Ct.

2,432.—PULLEY HALL LAMP.—Francis T. Fracker (assignor to The Tucker Manufacturing Company), Boston, Mass.

2,433.—BLACKING-BRUSH HANDLE.—William A. Greene, Troy, N. Y.

2,434.—CANCELING STAMP.—B. B. Hill, Springfield, Mass.

2,435 and 2,436.—STOVE PLATE.—George Himrod and Charles G. Moulton (assignor to George Himrod), Chicago, Ill. Two patents.

2,437.—COOK STOVE.—James R. Hyde (assignor to A. Sheldon and Chauncey O. Greene), Troy, N. Y.

2,438 and 2,439.—CENTER PIECE.—Samuel Kellett, San Francisco, Cal. Two patents.

2,440.—DRINKING TUMBLER.—John Matthews, Jr. New York City.

2,441 to 2,444.—FLOOR OIL-CLOTH PATTERN.—C. S. Meyer, Bergen, N. J., assignor to Edward C. Sampson, New York City. Four patents.

2,445.—BURIAL CASE.—Levi Moses, Janesville, Wis.

2,446 to 2,455.—CARPET PATTERN.—Elmer J. Ney (assignor to Lowell Manufacturing Company), Lowell, Mass. Ten patents.

2,456.—TRADE MARK.—Edward F. Pugert, Chicago, Ill.

2,457.—CHILD'S LONG COMB.—Leonce Picot, Hoboken, N. J., assignor to Rubber Clothing Company, N. Y.

2,458.—SNAP HOOK.—John Protz, Easton, Pa.

2,459 to 2,466.—CANDY FIGURE.—Leonhard Schulze (assignor to Thomas Mills and Bro). Philadelphia, Pa. Eight patents.

2,467.—STOVE ORNAMENT.—Samuel S. Utter, New York City.

2,468.—PLATES OF A HALL STOVE.—Jasper Van Wormer, Albany, N. Y.

2,469.—FLOOR OIL-CLOTH PATTERN.—John Y. Webster, New York City, assignor to Edward Harvey, Brooklyn, N. Y.

2,470.—FORK OR SPOON HANDLE.—William B Durgin, Concord, N. H.

2,471.—LABEL.—A. Miles, Winona, Minn.

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Of American Manufactures and the Mechanic Arts, will be opened in the spacious Hall of the Maryland Institute, Baltimore, on Tuesday evening, October 2d, 1866, and close Oct. 30th.
Articles for Competition and Premium must be deposited before Thursday night, Sept 27th.
For particulars, address the undersigned, or Joseph Gibson, Actuary.
JNO. F. MEREDITH,
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IMPROVED STATIONARY AND PORTABLE Steam Engines and Boilers, also Saw Mills, Cotton and Hay Presses, Corn and Flour Mills, on hand and in process of construction. Marine Engines, Iron Steamers. Light-draft River Boats, Barges, Iron Bridges, Tanks, and general iron work constructed to order. Address T. F. ROWLAND,
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N. B.—This detector is covered by two U. S. patents. Parties using or selling these instruments without authority from me will be dealt with according to law. [11 tf

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Patent Rolled Plate Glass for Skylights for sale very low by
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After a test of five years' service, this Governor has proved itself far superior to any other hitherto in use, practically accomplishing for Water Power the same as a Cut-off for Steam Power.
Every machine guaranteed to give entire satisfaction to the purchaser, or no sale. Office 13 Kilby street, Boston, Mass.
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For sale in New York by J. E. STEVENSON, 40 Dey street, and GEO. TALCOTT, 69 Liberty street.

☞ A few of the many testimonials which the Company has received, in regard to the operation of their Governors, were published May 19, 1866, in No. 21 of this paper, to which reference is made. 26 13

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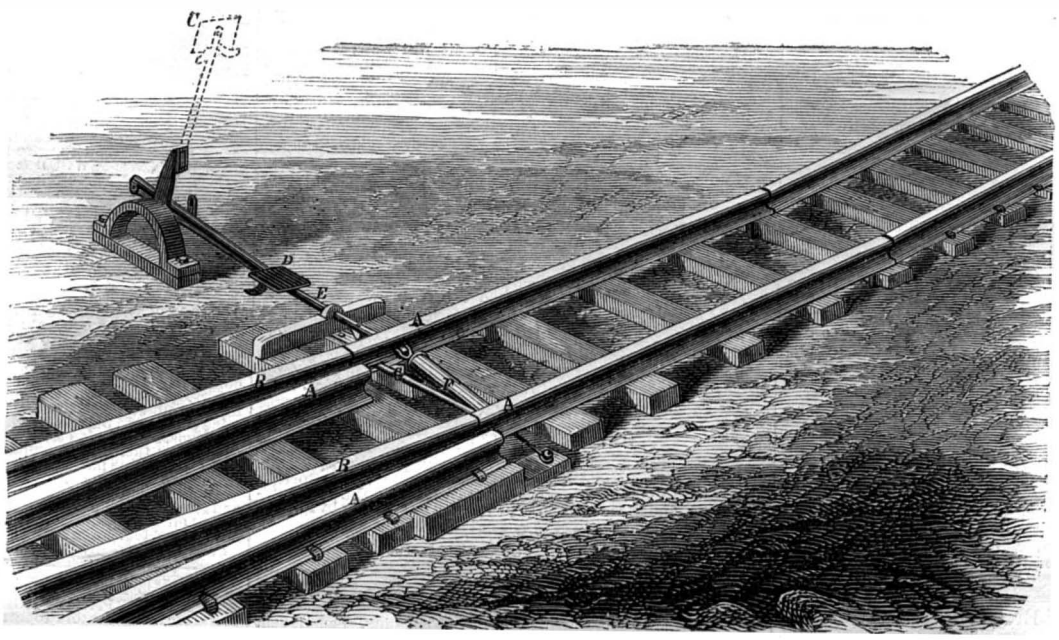
Self-adjusting Railroad Switch.

The carelessness or inattention of switchmen has been one among the causes of some of the most deplorable accidents on our railroads. Wherever a siding occurs it is not in so constant use as the main line, and is generally designed for occasional and temporary purposes. Consequently, if a switch keeps the main line intact, except at the time while being operated, it subserves the usual purposes of a railroad switch. The improvement illustrated in the engraving is intended to firmly lock the line, and to bring the rails back to their normal position as soon as the force which removed them is withdrawn.



ZINN'S SELF-ADJUSTING RAILROAD SWITCH.

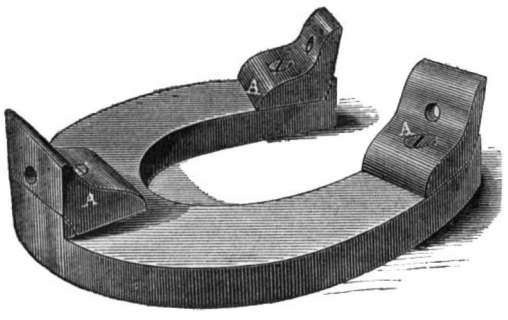
Let A represent the rails of the main line, and B the turnout. The switchman, to connect the switch with the siding, depresses the lever from its position at C, and brings it to a horizontal position, retaining it there by his weight upon the seat, D.

To assist him in holding it, a lug on D can be made to catch on the bar, E. When the lever is released, a strong spiral spring in the cylinder, F, brings the rails back to position, where they are held securely by the catch-spring, the end of which is seen at G. This spring has a projection which rises above the base of the rail and secures it firmly, so that no accident can displace the track. The first movement of the lever from its upright position depresses this catch-spring and permits the shifting of the track. The device appears to be a very efficient and desirable improvement.

It was patented March 13, 1866, by John W. Zinn, Caldwell, N. J., to whom apply for further particulars.

LITZENBERG'S ADJUSTABLE SHOE CALKS.

The engraving represents a new method of applying winter calks to horseshoes. Its object and mode of application can be readily understood by the engraving. The shoe itself is forged, very like the ordinary summer shoe, except that at the toe and heel are left slight projections, against which the adjustable calks abut. The improvement is intended



to admit of the sharpening and adjustment of the calks without the aid of the smith. They are secured by a screw, A, passing through the shank of the calk and tapped into the shoe.

It was patented Aug. 21, 1866, through the Scientific American Patent Agency, by William Litzenberg, to whom applications for rights and for further particulars should be addressed, at Macomb, Ill.

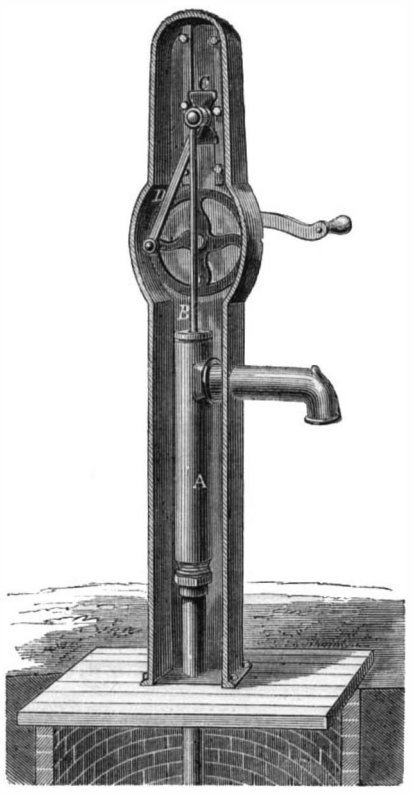
Railroad in the Alps.

Dr. Prime, over the signiture of "Irenius," is writing to the New York *Observer* very interesting letters from the continent. In his last he gives the following account of a railroad up the Alps to convey ice down to the European continental cities :—

"Penetrating secluded regions where frost has been king since the world began, the rail has made even the everlasting glaciers, these frozen cataracts, articles of merchandise. As the quarries in the mountains are worked by the art and spirit of man, so the icebergs that here grow from age to age, and scarcely seem to melt at all, are cut into blocks and transported by rail to Paris. The glacier of Grindelwald is drank in brandy punches at the Grand Hotel and the Louvre. To get the ice, these mighty frozen seas are excavated in galleries and chambers and magnificent saloons. The depths of snow on the surface exclude the sunbeams, but calcium lights shed a brilliant luster reflected as from a thousand mirrors of glass, and in small apartments fitted up for the purpose, the furniture of a well appointed parlor, sofas, chairs, and cushions, invite to cold but not inhospitable repose. When the Mer de Glace is taken by rail down into Italy and thence by ship to the East Indies, ice will be reasonably cheap in Calcutta. And this will be more readily done than to tow an iceberg from the North Pole."

ANDREWS'S LIFTING AND FORCE PUMP.

Solomon said "to the making of books there is no end." The statement is equally applicable to that



household implement, so extensively used, the pump. Still, although there may sometimes be failure of improvement where alterations are made, yet the pump has been improved; it could not well be simplified. The engraving of the pump herewith presented possesses qualities which, it is claimed, are not shared, combined together, by any other in the market. As will be seen, a rotary motion is easily transformed into a direct-acting reciprocating movement, and the pump can be used as a common lifting or as a force pump.

The pump itself is inclosed in a cast-iron case, one side left off in the figure, the case inclosing the working barrel, wheel, arm, and slide. A pipe leads down the well, and a nozzle or discharge pipe projects from the case. The common valves are contained in the barrel, A, and are operated by the rod, B, which is connected to the cross head, C, and receives motion from the arm, D.

It will be seen that all the motions affecting the working parts of the pump are direct, and that any part can be easily repaired when worn. It will also be noticed that there can be but little wear to these parts, and that, therefore, the pump may be kept in order for an indefinite time. It seems to be a very simple and effectual device for raising water.

Patented on May 8, 1866, by R. H. Andrews, whom address, Box 358, Washington, D. C.

POLISHING SLATE, brought from Bohemia, has been computed to contain in every cubic inch forty-one thousand millions of animalcules. Since a cubic inch of this slate weighs 220 grains, in every single grain there are 187 millions of skeletons, and one of them would therefore weigh about $\frac{1}{187000000}$ of a grain.

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